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ALL IN ONE CS201 Final term PAPERS & MCQz

SOLVED BY Farhan & Ali

BS (cs) 2nd sem

Hackers Group

Mandi Bahauddin

Remember us in your prayers

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Question No: 1 (Marks: 1) - Please choose one

&& is ---------- operator.

► An arithmetic

► ***Logical***

► Relational

► Unary

Question No: 2 (Marks: 1) - Please choose one

Which of the following function(s) is/are included in **ctype.h** header file?

► isdigit(int c)

► isxdigit(int c)

► tolower(int c)

► ***All of the above***

Question No: 3 (Marks: 1) - Please choose one

Disks are _____ devices having access time of _____ milliseconds.

► Electro-physical, 6

► Electro-Mechanical, 4

► Electro-physical, 5

► ***Electro-Mechanical, 7***

Question No: 4 (Marks: 1) - Please choose one

All preprocessor directives are started with the symbol_____.

► *

► ++

► @

► #

Question No: 5 (Marks: 1) - Please choose one

When we use manipulators in our program then which header file should be included?

► iostream.h

► stdlib.h

► stdio.h

► ***iomanip.h***

Question No: 6 (Marks: 1) - Please choose one

setprecision is a parameter less manipulator.

► True

► ***False***

Question No: 7 (Marks: 1) - Please choose one

Which of the following is NOT a preprocessor directive?

► #error

► #define

► #line

► ***#ndefine***

Question No: 8 (Marks: 1) - Please choose one

We can do arithmetic with references like pointers.

► True

► ***False***

Question No: 9 (Marks: 1) - Please choose one

What does **(*this)** represents?

► The current function of the class

► The current pointer of the class

► ***The current object of the class***

► A value of the data member

Question No: 10 (Marks: 1) - Please choose one

Friend function of a class is _____ .

► Member function

► ***Non-member function***

► Private function

► Public function

Question No: 11 (Marks: 1) - Please choose one

A function can declare itself a friend of a class.

► True

► ***False***

Question No: 12 (Marks: 1) - Please choose one

Overloaded delete operator function takes the same parameter as an argument returned by new operator function.

► ***True***

► False

Question No: 13 (Marks: 1) - Please choose one

The second parameter of operator functions for << and >> are objects of the class for which we are overloading these operators.

► ***True***

► False

Question No: 14 (Marks: 1) - Please choose one

A template function must have at least ---------- generic data type

► Zero

► ***One***

► Two

► Three

Question No: 15 (Marks: 1) - Please choose one

A template function must have only generic data types.

► True

► ***False***

Question No: 16 (Marks: 1) - Please choose one

We can not make a member function of a class as template function.

► True

► ***False***

Question No: 17 (Marks: 1) - Please choose one

Which character is inserted at the end of string to indicate the end of string?

► new line

► tab

► ***null***

► carriage return

Question No: 18 (Marks: 1) - Please choose one

Assignment operator is used for _____.

► calculation

► reading

► ***assigning value to variables***

► None of the given options.

Question No: 19 (Marks: 1) - Please choose one vuzs

The object _____may be used both for file input and file output

► ***fstream,***

► ifstream,

► ofstream,

► none of the given options.

Question No: 20 (Marks: 1) - Please choose one

Which of the following function calling mechanism is true for the function prototype given below?

float func(float &);

► Call by value

► Call by reference using pointer

► ***Call by reference using reference variable***

► None of the given options

Question No: 21 (Marks: 1) - Please choose one

The programs, in which we allocate static memory, run essentially on _____

► Heap

► System Cache

► None of the given options

► ***Stack***

Question No: 22 (Marks: 1) - Please choose one

Overloaded delete operator function takes parameter of void pointer and returns _____.

► ***void***

► void pointer

► pointer to an object

► pointer of type int

Question No: 23 (Marks: 1) - Please choose one

What should be the return type of the constructor?

► void pointer

► int

► same as object type

► ***constructors do not return any thing***

Question No: 24 (Marks: 1) - Please choose one

It is a way of reusing the code when we contain objects of our already written classes into a new class,

► ***True***

► False

Question No: 25 (Marks: 1) - Please choose one vuzs

Templates are not type safe.

► true

► ***false***

Question No: 26 (Marks: 1) - Please choose one

The functions used for dynamic memory allocation return pointer of type _____

► int

► float

► ***void***

► double

Question No: 27 (Marks: 2)

Write a declaration statement for an array of 10 elements of type float. Include an initialization statement of the first four elements to 1.0, 2.0, 3.0 and 4.0.

Answer:

float floatArry[10] = {1.0,2.0,3.0,4.0};

Question No: 28 (Marks: 2)

Write the general syntax for the declaration of pre-increment and post-increment member operator function.

Classname operator ++(); ---- pre increment

Classname operator ++(int) ---- post increment

Question No: 29 (Marks: 2)

What is difference between endl and \n?

Question No: 30 (Marks: 2)

What does code optimization mean?

Question No: 31 (Marks: 3)

How is the following cout statement interpreted by compiler?szuv

cout << a << b << c ;

Question No: 32 (Marks: 3)

Suppose an object of class A is declared as data member of class B.

(i) The constructor of which class will be called first? Answer : A

(ii) The destructor of which class will be called first? Answer : B

Question No: 33 (Marks: 3)

Define static variable. Also explain life time of static variable?

Question No: 34 (Marks: 5)

What is difference between Unary and binary operators and how they can be overloaded?

Question No: 35 (Marks: 5)

What steps we must follow to design good program?

Question No: 36 (Marks: 5)

Write a program which defines five variables which store the salaries of five employees, using setw and setfill manipulators to display all these salaries in a column.

Note: Display all data with in a particular width and the empty space should be filled with character x

Output should be displayed as given below:

xxxxxx1000

xxxxxx1500

xxxxx20000

xxxxx30000

xxxxx60000

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Marks: 58

Question No: 1 (Marks: 1) - Please choose one

*.doc is _____ by type.

.

- ► Sequential File
- ► Random Access File
- ► Data File
- ► Record File

Question No: 2 (Marks: 1) - Please choose one

Which of the following is NOT a preprocessor directive?

- ► #error
- ► #define

► #line

► #ndefine

Question No: 3 (Marks: 1) - Please choose one

The return type of operator function must always be void.

► True

► False

The syntax of the prototype of the overloaded operator function is: *return-type* operator *operator-symbol (parameter-list);*

Question No: 4 (Marks: 1) - Please choose one

What does **(*this)** represents?

► The current function of the class

► The current pointer of the class

► The current object of the class

► A value of the data member

Whenever an object calls a member function, the function implicitly gets a pointer from the calling object. That pointer is known as *this* pointer. '*this*' is a key word. We cannot use it as a variable name. '*this*' pointer is present in the function, referring to the calling object. For example, if we have to refer a member, let's say *buf*, of our *String*class, we can write it simply as: b*uf ;*

Question No: 5 (Marks: 1) - Please choose one

The statement **cin.get ();** is used to,

► Read a string from keyboard

► Read a character from keyboard

► Read a string from file

► Read a character from file

Question No: 6 (Marks: 1) - Please choose one

When we do dynamic memory allocation in the constructor of a class, then it is necessary to provide a destructor.

► True

► False

Question No: 7 (Marks: 1) - Please choose one

Overloaded new operator function takes parameter of type *size_t* and returns

► void (nothing)

► void pointer

► object pointer

► int pointer

Question No: 8 (Marks: 1) - Please choose one

The second parameter of operator functions for << and >> are objects of the class for which we are overloading these operators.

► True

► False

The second parameter to *operator* << is an object of the class that we are overloading the operator for. Similar is the case for *operator* >>.

Question No: 9 (Marks: 1) - Please choose one

C++ is a case-sensitive language

► True

► False

Question No: 10 (Marks: 1) - Please choose one

To include code from the library in the program, such as iostream, a directive would be called up using this command.

► #include “iostream.h”

► include

► include

► #include

Question No: 11 (Marks: 1) - Please choose one

A template function must have only generic data types.

► True

► False

Its not compulsory, only min we have one generic data type but we can have native data type as well.

Question No: 12 (Marks: 1) - Please choose one

Template class can not have static variables.

► True

► False

Question No: 13 (Marks: 1) - Please choose one

What will be the correct syntax to assign an array named ***arr*** of 5 elements to a pointer ***ptr***?

► *ptr = arr ;

► ptr = arr ;

► *ptr = arr[5] ;

► ptr = arr[5] ;

Question No: 14 (Marks: 1) - Please choose one

What will be the correct syntax to access the value of fourth element of an array using pointer ptr?

► ptr[3]

► (ptr+3)

► *(ptr+3)

► Both 1and 3

try this demo program to confirm result I wrote for you.

2 option will print the reference rest 1,3 are righ options

```
#include

 #include

// #include
```

```
main()
{
int myarr [4]= {0,1,2,3};
int *ptr ;
ptr = myarr;
cout<
cout<<*(ptr+3);
cout<<(ptr+3);
int i = 0;
cin>> i;
}
```

Question No: 15 (Marks: 1) - Please choose one

If most significant bit of un-signed number is 1 then it represents a positive number.

- ► True
- ► False

The most significant bit is used as a sign bit. If this bit is zero, the number is considered positive. However, if it is 1, the number will be considered negative.

Question No: 16 (Marks: 1) - Please choose one

If there is a symbol (& sign) used with the variable name followed by data type then it refers to _____ and if & is being used with variable name then it refers to _____.

- ► Address of variable, reference variable
- ► Reference variable, value of variable
- ► Reference variable, address of variable
- ► Address of variable, value of variable

we see a data type followed by & sign, it's a reference. And when the & sign is being used in the code with a variable name then it is the address of the variable

Question No: 17 (Marks: 1) - Please choose one

We can also do conditional compilation with preprocessor directives.

- ► True
- ► False

Question No: 18 (Marks: 1) - Please choose one

The default value of a parameter can be provided inside the _____

- ► function prototype
- ► function definition
- ► both function prototype or function definition
- ► none of the given options.

The default value of a parameter is provided inside the function prototype or function definition.

Question No: 19 (Marks: 1) - Please choose one

Classes defined inside other classes are called _____ classes

- ► looped
- ► nested
- ► overloaded
- ► none of the given options.

Question No: 20 (Marks: 1) - Please choose one

What purpose do classes serve?

- ► Data encapsulation
- ► Providing a convenient way of modeling real-world objects
- ► Simplifying code reuse
- ► All of the given options

Question No: 21 (Marks: 1) - Please choose one

vuzs

Every class contains _____.

- ► Constructor
- ► Destructor

► Both a constructor and a destructor

► None of the given options

Question No: 22 (Marks: 1) - Please choose one

new operator is used to allocate memory from the free store during

► Compile Time

► Run Time

► Link Time

► None of the given options

Question No: 23 (Marks: 1) - Please choose one

When an object of a class is defined inside another class then,

► Destructor of enclosing class will be called first

► Destructor of inner object will be called first

► Constructor and Destructor will be called simultaneously

► None of the given options

Question No: 24 (Marks: 1) - Please choose one

It is possible to define a class within another class.

► True

► False

Question No: 25 (Marks: 1) - Please choose one

New and Delete are also used with _____ and data types as well.

► Class, Objects

► Structures, Pointers

► Both Class and structures

► None of above

we prefer to use **new** and **delete** operators as they are designed to work with classes and objects

Question No: 26 (Marks: 1) - Please choose one

With New keyword, data types and class members are initialized with meaningful values instead of garbage.

► True

► False

Question No: 27 (Marks: 2)

How many arguments a Unary Operator take? Can we make a binary operator as unary operator?

Ans: Unary operator takes only one aurgument like i++ or i— (Post increment or post decrement operators for intergers) or ++i,--i (Pre increment or pre decrement operators for intergers) ,we can not make Unary operator as binary or binary as Unary operator.

Question No: 28 (Marks: 2)

Which arithmetic operators cannot have a floating point operand?

Ans:

Modulus operator

This operator can only be used with integer operands ONLY

Question No: 29 (Marks: 2)

What are manipulators? Give one example.

Ans:

The manipulators are like something that can be inserted into stream, effecting a change in the behavior. For example, if we have a floating point number, say pi (л), and have written it as *float pi = 3.1415926* ; Now there is need of printing the value of pi up to two decimal places i.e. 3.14 . This is a formatting functionality. For this, we have a *manipulator* that tells about width and number of decimal points of a number being printed.

Some manipulators are parameter less. We simply use the name of the manipulator that works. For example, we have been using *endl*, which is actually a manipulator, not data. When we write *cout << endl* ; a new line is output besides flushing the buffer. Actually, it manipulates the output stream.

Question No: 30 (Marks: 2)

Write down piece of code that will declare a matrix of 3x3. And initialize all its locations with 0;

Ans:

int matrix [3] [3] ;

include<iostream.h>

```
main () {
   int matrix [3][3];
   int anyvalue = 12

   for (int a=0;a<3;a++)
   { for (int b = 0;b<3;b++)
  { matrix[a][b]= anyvalue;
   cout<<matrix[a][b]<<endl;}}
   int i=0;
   cin>>i;
}
```

Question No: 31 (Marks: 3)

Which one (copy constructor or assignment operator) will be called in each of the following code segment?

1) Matrix m1 (m2);

2) Matrix m1, m2;

m1 = m2;

3) Matrix m1 = m2;

Ans:

1) Matrix m1 (m2); **copy constructor**

2) Matrix m1, m2;

m1 = m2; **assignment operator**

3) Matrix m1 = m2; **assignment operator**

Question No: 32 (Marks: 3)

What will be the output of following function if we call this function by passing int 5?

template T reciprocal(T x) {return (1/x); }

Ans:

1/5

Question No: 33 (Marks: 3)

Identify the errors in the following member operator function and also correct them.

```
math * operator(math m);

math * operator (math m)

{

    math temp;

    temp.number= number * number;

    return number;


}
```

ANS:

The errors are in the arguments of the member operation function and also in the body of operator member function.

Correct function should be

```
math *operator(math *m);

math *operator (math *m)

{

    math temp;

    temp = m;

    temp.number= number * number;

    return temp.number;


}
```

Question No: 34 (Marks: 5)

Write a program which defines three variables of type double which store three different values including decimal points, using setprecision manipulators to print all these values with different number of digits after the decimal number.

Ans:

```
#include

#include

int main ()

{

 double x1 = 12345624.72345

double x2 =  987654.12345

double x3 =  1985.23456

 cout << setprecision (3) << x1<< endl;

 cout << setprecision (4) << x2 << endl;

cout << setprecision (5) << x3<< endl;

 return 0;

}
```

Question No: 35 (Marks: 5)

What are the advantages and disadvantages of using templates?

Ans:

Many thing can be possible without using templates but it do offer several clear advantages not offered by any other techniques:

Advanatages:

• Templates are easier to write than writing several versions of your similar code for different types. You create only one generic version of your class or function instead of manually creating specializations.

• Templates are type-safe. This is because the types that templates act upon are known at compile time, so the compiler can perform type checking before errors occur.

• Templates can be easier to understand, since they can provide a straightforward way of abstracting type information.

• It help in utilizing compiler optimizations to the extreme. Then of course there is room for misuse of the templates. On one hand they provide an excellent mechanism to create specific type-safe classes from a generic definition with little overhead.

Disadvantages:

On the other hand, if misused

• Templates can make code difficult to read and follow depending upon coding style.

• They can present seriously confusing syntactical problems esp. when the code is large and spread over several header and source files.

• Then, there are times, when templates can "excellently" produce nearly meaningless compiler errors thus requiring extra care to enforce syntactical and other design constraints. A common mistake is the angle bracket problem.

Question No: 36 (Marks: 5)

Suppose a program has a math class having only one data member **number**.

Write the declaration and definition of operator function to overload + operator for the statements of main function.

```
math obj1, obj2;
obj2= 10 + obj1  ;
```

Ans:

```
#include
math
{
mth operator + (obj1,obj2)
mth operator + (obj1,obj2)
{
 mth operator + (obj1,obj2)
mth operator + (obj1,obj2)
}
}
```

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Marks: 58

Question No: 1 (Marks: 1) - Please choose one

In if structure the block of statements is executed only,

- ► When the condition is false
- ► When it contain arithmetic operators
- ► When it contain logical operators
- ► ***When the condition is true***

Question No: 2 (Marks: 1) - Please choose one

Header file: **fstream.h** includes the definition of the stream classes _____.

- ► ifstream, fstream, cout
- ► ***ifstream, fstream, ofstream***
- ► fstream, cin, cout
- ► None of the above

Question No: 3 (Marks: 1) - Please choose one

To access the data members of structure _____ is used.

► ***dot operator (.)***

► * operator

► operatorà

► None of given.

Question No: 4 (Marks: 1) - Please choose one

eof( ), bad( ), good( ), clear( ) all are manipulators.

► True

► **False**

Question No: 5 (Marks: 1) - Please choose one

Which kind of functions can access private member variables of a class?

► ***Friend functions of the class***

► Private member functions of the class

► Public member functions of the class

► Friend, private and public functions

Question No: 6 (Marks: 1) - Please choose one

The return type of operator function must always be void.

► True

► ***False***

Question No: 7 (Marks: 1) - Please choose one

Friend function of a class is _____ .

► Member function

► ***Non-member function***

► Private function

► Public function

Question No: 8 (Marks: 1) - Please choose one

Function implementation of friend function must be defined outside the class.

► True

► ***False (any where in the class)***

Question No: 9 (Marks: 1) - Please choose one

The normal source of **cin** object is,

► File

► Disk

► ***Keyboard***

► RAM

Question No: 10 (Marks: 1) - Please choose one

Which of the following is correct way to initialize a variable x of int type with value 10?

► int x ; x = 10;

► int x = 10;

► int x, x = 10;

► ***x = 10; http://groups.google.com/group/vuZs/***

Question No: 11 (Marks: 1) - Please choose one

Consider the following code segment. What will be the output of the following program?

```
int func(int) ;
int num = 10 ;
int main(){
int num ;
num = 5 ;
cout << num ;
cout << func(num) ;
}
int func(int x){
return num ;
}
```

► 5, 5

► 10, 5

► ***5, 10***

► 10, 10

Question No: 12 (Marks: 1) - Please choose one

With template function, the compiler automatically detects the passed data and generates a new copy of function using passed data.

► ***True***

► False

Question No: 13 (Marks: 1) - Please choose one

What will be the correct syntax to declare two-dimensional array of float data type?

► float arr{2}{2} ;

► ***float arr[2][2] ;***

► float arr[2,2] ;

► float[2][2] arr ;

Question No: 14 (Marks: 1) - Please choose one

The first parameter of operator function for << operator,

► Must be passed by value

► ***Must be passed by reference***

► Can be passed by value or reference

► Must be object of class

Question No: 15 (Marks: 1) - Please choose one

Heap is constantly changing in size.

► ***True***

► False

Question No: 16 (Marks: 1) - Please choose one

While calling function, the arguments are assigned to the parameters from

► ***left to right.***

► right to left

► no specific order is followed

► none of the given options.

Question No: 17 (Marks: 1) - Please choose one

Classes defined inside other classes are called _____ classes

► looped

► ***nested***

► overloaded

► none of the given options.

Question No: 18 (Marks: 1) - Please choose one

If we define an identifier with the statement **#define PI 3.1415926** then during the execution of the program the value of PI _____

► can not be replace

► None of the given options

► ***Remain constant.***

► can be changed by some operation

Question No: 19 (Marks: 1) - Please choose one

Which value is returned by the destructor of a class?

► A pointer to the class.

► An object of the class.

► A status code determining whether the class was destructed correctl

► ***Destructors do not return a value.***

Question No: 20 (Marks: 1) - Please choose one

Every class contains _____.

► Constructor

► Destructor

► ***Both a constructor and a destructor***

► None of the given options

Question No: 21 (Marks: 1) - Please choose one

A template function must have

► **One or more than one arguments**

► Only one argument

► Zero argument

► None of the given options

http://groups.google.com/group/vuZs/

Question No: 22 (Marks: 1) - Please choose one

Structured Query Language is used for _____

► ***Databases Management***

► Networks

► Writing Operating System

► none of the given options

Question No: 23 (Marks: 1) - Please choose one

When a call to a user-defined function finishes, the variable defined inside the function is still in existence.

► True

► **False**

Question No: 24 (Marks: 1) - Please choose one

The precedence of an operator can be changed through operator overloading.

► True

► ***False***

Question No: 25 (Marks: 1) - Please choose one

A Matrix can be composed of ints, floats or doubles as their elements. Best way is to handle this , _____

► Write a separate class to handle each

► **Use templates**

► Use strings to store all types

► None of the given options

A *Matrix* can be composed of *int*s, *float*s or *double*s as their elements. Instead of handling these data types separately, we can write *Matrix* class as a template class and write code once for all native data types.

Write *Matrix* class as a template class and write code once for all native data types

Question No: 26 (Marks: 1) - Please choose one

"delete" operator is used to return memory to free store, which is allocated by the **"new"** operator.

► ***True***

► False

Question No: 27 (Marks: 2)

What is the difference between **switch** statement and **if** statement.

Question No: 28 (Marks: 2)

How can we initialize data members of contained object at construction time?

Question No: 29 (Marks: 2)

How the data members of a class are initialized with meaningful values?

Question No: 30 (Marks: 2)

Can we overload ***new*** and ***delete*** operators?

Question No: 31 (Marks: 3)

What will be the output of following functions if we call these functions three times?

1)

```
void func1(){
int x = 0;
x++;
cout << x << endl;
}
```

2)

```
void func2(){
static int x = 0 ;
```

```
x++;
cout << x << endl ;
}
```

Question No: 32 (Marks: 3)

What is the keyword '**this**' and what are the uses of '**this'** pointer?

Question No: 33 (Marks: 3)

Suppose an object of class A is declared as data member of class B.

(i) The constructor of which class will be called first?

(ii) The destructor of which class will be called first?

Question No: 34 (Marks: 5)

Write the general syntax of a class that has one function as a friend of a class along with definition of friend function.

Question No: 35 (Marks: 5)

Write down the disadvantages of the templates.

Question No: 36 (Marks: 5)

Write a program which defines five variables which store the salaries of five employees, using setw and setfill manipulators to display all these salaries in a column.

Note: Display all data with in a particular width and the empty space should be filled with character x

Output should be displayed as given below:

```
xxxxxx1000
xxxxxx1500
xxxxx20000
xxxxx30000
xxxxx60000
```

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Operator overloading can be performed through_____.

► Classes

► **Functions**

► Operators

► Reference

Question No: 2 (Marks: 1) - Please choose one

When a value is referred by a normal variable then it is known as,

► Direct Reference

► **Indirect Reference**

► Partial Reference

► Proper Reference

When a value is referred by a normal variable is known as direct reference

Question No: 3 (Marks: 1) - Please choose one

Which of the following function is used to increase the size of already allocated memory chunk?

► malloc

► calloc

► realloc

► free

(FQ, vuzs, 2010)

Question No: 4 (Marks: 1) - Please choose one

Which of the following is NOT a preprocessor directive?

► #error

► #define

► #line

► #ndefine

list of preprocessors

• #include • #include "filename" • #define • #undef • #ifdef • #ifndef • #if • #else • #elif • #endif • #error • #line • #pragma • #assert

Question No: 5 (Marks: 1) - Please choose one

The stream objects **cin** and **cout** are included in which header file?

► iostream.h

► fstream.h

► istream.h

► ostream.h

Question No: 6 (Marks: 1) - Please choose one

Overloaded delete operator function takes the same parameter as an argument returned by new operator function.

► True

► False

The same pointer that is returned by the new operator, is passed as an argument to the delete operator. These rules apply to both, if operators (new and delete) are overloaded as member or non-member operators (as global operators).

Question No: 7 (Marks: 1) - Please choose one

When an array of object is created dynamically then there is no way to provide parameterized constructors for array of objects.

► **True**

► False

if we are allocating an array of objects, there is no way to pass arguments to objects' constructors. Therefore it is required that the objects that are stored in such an array have a no-argument constructor.

Question No: 8 (Marks: 1) - Please choose one

C is widely known as development language of _____ operating system.

► Linux

► Windows

► **Unix**

► Mac OS

In the start C became widely known as the development language of the UNIX operating system, and the UNIX operating system was written by using this C language. The C language is so powerful that the compiler of C and other various operating systems are written in C.

Question No: 9 (Marks: 1) - Please choose one

Computer can understand only machine language code.

► **True**

► False

Question No: 10 (Marks: 1) - Please choose one

We can not define a function as a friend of a Template class.

► True

► **False**

Class templates can have friends. A class or class template, function, or function template can be a friend to a template class. Friends can also be specializations of a class template or function template, but not partial specializations.

Question No: 11 (Marks: 1) - Please choose one

What will be the value of 'a' and 'b' after executing the following statements?

a = 3;

b = a++;

- ► 3, 4
- ► 4, 4
- ► 3, 3
- **► 4, 3**

Question No: 12 (Marks: 1) - Please choose one

Consider the following code segment. What will be the output of following code?

```
int addValue (int *a){
int b = (*a) + 2;
return b ;
}
main () {
int x =6 ;
cout <<  x << "," ;
cout << addValue(&x) << "," ;
cout <<  x ;
}
```

- **► 6,8,6**
- ► 6,6,8

► 6,8,8

► 6,6,6

Question No: 13 (Marks: 1) - Please choose one

_____ is used to trace the logic of the program and correct the logical errors.

► Compiler

► Editor

► Linker

► **Debugger**

Question No: 14 (Marks: 1) - Please choose one

new and delete are _____ whereas malloc and free are _____.

► Functions, operators

► Classes, operators

► **Operators, functions**

► Operators, classes

Hence, we can call new and delete operators, P# 342
we have allocated a memory space for our use by malloc function. P# 285

Question No: 15 (Marks: 1) - Please choose one

Like member functions, _____ can also access the private data members of a class.

► Non-member functions

► **Friend functions**

► Any function outside class

► None of the given options

Question No: 16 (Marks: 1) - Please choose one

Which situation would require the use of a non-member overloaded operator?

► The overloaded operator is an Assignment operator.

► **The left most operand is an object of a class.**

► The left operand is built-in data type.

► The operator returns a reference.

When an operator function is implemented as a non-member function, the left-most operand may be an object of the operator's class, an object of a different class, or a built-in type

Question No: 17 (Marks: 1) - Please choose one

The stream insertion and stream extraction operators are already overloaded for _____.

► User-defined data types

► **Built-in data types**

► User-defined and built-in data types

► None of the given options

Question No: 18 (Marks: 1) - Please choose one

If we define an identifier with the statement **#define PI 3.1415926** then during the execution of the program the value of PI _____.

► can not be replaced

► None of the given options

► **Remain constant.**

► can be changed by some operation

Question No: 19 (Marks: 1) - Please choose one vuzs

Assignment operator is ----------associative.

► **right**

► left

► binary

► unary

You can assign values to several variables in a single statement. For example, the following code sets the contents of apples and oranges to the same value:

apples = oranges = 10;

The assignment operator is right associative, so this statement executes by first storing the value 10 in oranges and then storing the value in oranges in apples, so it is effectively

apples = (oranges = 10);

Question No: 20 (Marks: 1) - Please choose one

When ever dynamic memory allocation is made in C/C++, it is freed_____.

► Explicitly

► **Implicitly**

► Both explicitly and implicitly

► None of the given options

Question No: 21 (Marks: 1) - Please choose one

The appropriate data type to store the number of rows and colums of the matrix is_____.

► float

► **int**

► char

► none of the given options.

Question No: 22 (Marks: 1) - Please choose one

Which of the following function do NOT initialize the chunk of memory to all zero?

► calloc() function

► Both malloc() and calloc()

► None of the above

► **malloc() function**

The **malloc** function differs from **calloc** in the way that the space allocated by **malloc** is not initialized and contains any values initially.

Question No: 23 (Marks: 1) - Please choose one

The function free() returns back the allocated memory got thorough calloc and malloc to _____ .

► stack

► **heap**

► stack and heap

► None of the given options

Question No: 24 (Marks: 1) - Please choose one

width() is member function of _____

► cin object

► cout object

► **Both cin and cout object**

► None of the given option

Question No: 25 (Marks: 1) - Please choose one

Templates are not type safe.

► true

► **false**

Templates are type-safe. This is because the types that templates act upon are known at compile time, so the compiler can perform type checking before errors occur.

Question No: 26 (Marks: 1) - Please choose one

A Matrix can be composed of ints, floats or doubles as their elements. Best way is to handle this , _____

► Write a separate class to handle each

► **Use templates**

► Use strings to store all types

► None of the given options

A *Matrix* can be composed of *int*s, *float*s or *double*s as their elements. Instead of handling these data types separately, we can write *Matrix* class as a template class and write code once for all native data types. While writing this template class, the better approach to write will be, to go with a simple data type (e.g.*double*) first to write a *Matrix* class and then extend it to a template class later.

Question No: 27 (Marks: 2)

Give the general syntax of class template.

template

class myclass { ---} ;

Question No: 28 (Marks: 2)

What is a truth Table?

There are some areas where the decision structures become very complicated. Sometimes, we find it difficult to evaluate a complicated logical expression. Sometimes the logic becomes extremely complicated so that even writing it as a simple syntax statement in any language. It becomes complicated to determine what will be evaluated in what way. We know the concept of truth table. The truth tables are very important. These are still a tool available for analyzing logical expressions. We will read logic design in future, which is actually to do with chips and gates. How we put these things together.

Question No: 29 (Marks: 2)

What will be the output of following code, if user input a number **123**?

int input ;

cin >> oct >> input;

cout << hex << input ;

53

Rational: it will take 123 as octal and print it in hex form which is 53.

Question No: 30 (Marks: 2)

What is principle of friendship in the context of functions and classes?

Class can declare a friend function and someone from outside the class cannot declare itself friend of a class.

A friend function can access the private variables of class just like a member function

Question No: 31 (Marks: 3)

What are the limitations of the friendship relation between classes?

Class can declare a friend class from inside and someone from outside the class cannot declare itself friend of a class.

Question No: 32 (Marks: 3)

Suppose an object of class A is declared as data member of class B.

(i) The constructor of which class will be called first? a

(ii) The destructor of which class will be called first?b

Question No: 33 (Marks: 3)

Define static variable. Also explain life time of static variable?

When you declare a static variable (native data type or object) inside a function, it is created and initialized only once during the lifetime of the program

Question No: 34 (Marks: 5)

Write a program which defines three variables of type double which store three different values including decimal points, using setprecision manipulators to print all these values with different number of digits after the decimal number.

```
#include

#include

main () {

double a = 12.12345;

double b = 13.123456;
```

```
double c = 14.1234567;
cout << setprecision (5) << a << endl;
cout << setprecision (2) << a << endl;
cout << setprecision (3) << a << endl;
}
```

Question No: 35 (Marks: 5)

Let we have a class,

```
class String
{
private:
char  buf[25];
};
```

Write code for assignment (=) operator function which assign one String object to other object. Your code should also avoid self assignment

Answer:

```
void String::operator = ( const String &other )
 { int length ;
 length = other.length();
delete buf;
 buf = new char [length + 1];
 strcpy( buf, other.buf ); }
```

Question No: 36 (Marks: 5)

Read the given below code and explain what task is being performed by this function

```
Matrix :: Matrix ( int row , int col )
{
   numRows = row ;
```

```
    numCols = col ;
    elements = new ( double * ) [ numRows ] ;
    for ( int  i = 0 ; i < numRows ; i ++ )
{
        elements [ i ] = new double [ numCols ] ;
        for ( int j = 0 ; j < numCols ; j ++ )
                elements [ i ] [ j ] = 0.0 ;
     }
}
```

Hint : This function belong to a matrix class, having

Number of Rows = numRows

Number of Columns = numCols

Created 2010/9 Final ….

ASSALAM O ALIKUM all fellows

ALL IN ONE CS201 Final term PAPERS & MCQz

SOLVED BY Farhan & Ali

BS (cs) 2nd sem

Hackers Group

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Question No: 1 (Marks: 1) - Please choose one

When we define an array of objects then,

· Destructor will call once for whole array

· Destructor will call for each object of the array

· Destructor will never call

· Depends on the size of array

Question No: 2 (Marks: 1) - Please choose one

We can also create an array of user define data type

· True

· False

Question No: 3 (Marks: 1) - Please choose one

What is the sequence of event(s) when allocating memory using new operator?

· Only block of memory is allocated for objects

· Only constructor is called for objects

· Memory is allocated first before calling constructor

· Constructor is called first before allocating memory

If a single object is allocated, *operator new* is called to allocate memory, and then the constructor is called to initialize the object.

· If an array of objects is allocated, *operator new[]* is called to allocate memory for the whole array, and then the constructor is called for each element of the array.

· When a single object is deleted, the destructor for the object is called first, and then *operator delete* is called to free the memory occupied by the object.

· When an array of objects is deleted, the destructor for each element of the array object is called first, and then *operator delete[]* is called to free the memory occupied by the array.

Question No: 4 (Marks: 1) - Please choose one

We can delete an array of objects without specifying [] brackets if a class is not doing dynamic memory allocation internally

· **True**

· False

Although, this is good to deallocate an array of objects without specifying array operator ([]) as there is no dynamic memory allocation occurring from inside the Date class. But this is a bad practice.

Question No: 5 (Marks: 1) - Please choose one

The declarator of Plus (+) member operator function is

· **Class-Name operator + (Class-Name rhs)**

· Operator Class-Name + ( )

· Operator Class-Name + (rhs)

· Class-Name operator + ( )

Page 371,373 example are here

Complex operator + (Complex &);

Complex operator + (parameter-list);

The syntax of the prototype of the overloaded operator function is:

return-type operator operator-symbol (parameter-list);

operator is the keyword here. An example of this will be as follows:

Complex operator + (Complex &);

Question No: 6 (Marks: 1) - Please choose one

The second parameter of operator functions for << and >> are objects of the class for which we are overloading theseoperators

· True (not sure)

· False

Question No: 7 (Marks: 1) - Please choose one

Which of the following is correct way to initialize a variable x of int type with value 10?

· int x ; x = 10 ;

· int x = 10 ;

· int x, x = 10;

· x = 10 ;

variable already created in question only it is asking for initialization.

Question No: 8 (Marks: 1) - Please choose one

Default mechanism of function calling in case of array is _____and in case of variable is _____

· Call by value, call by reference

· Call by referene, call by reference

· Call by reference, call by value

· Call by value, call by value

Question No: 9 (Marks: 1) - Please choose one

What does STL stand for?

· Source template library

· Standard template library

· Stream template library

· Standard temporary library

STL stands for Standard Template Library

Question No: 10 (Marks: 1) - Please choose one

Skill(s) that is/are needed by programmers _____

· Paying attention to detail

· Think about the reusability

· Think about user interface

· All of the given options

Programming is an important activity as people life and living depends on the programs one make. Hence while programming one should

o Paying attention to detail

o Think about the reusability.

o Think about user interface

o Understand the fact the computers are stupid

o Comment the code liberally

Question No: 11 (Marks: 1) - Please choose one

For which array, the size of the array should be one more than the number of elements in an array?

· int

· double

· float

· char

Question No: 12 (Marks: 1) - Please choose one

new and delete are _____whereas malloc and free are _____

· Functions, operators

· Classes, operators

· Operators, functions

· Operators, classes

new and delete are operators in c++

C functions like **malloc()** and **free()** functions can also be used from within C++ code

Question No: 13 (Marks: 1) - Please choose one

The prototype of friend functions must be written _____the class and its definition must be written _____

· inside, inside the class

· inside, outside the class

· outside, inside the class

· outside, outside the class

Question No: 14 (Marks: 1) - Please choose one

Friend function of a class are _____of a class.

· Non-member functions not sure

· Friend functions

· Any function outside class

Question No: 15 (Marks: 1) - Please choose one

If overloaded plus operator is implemented as non-member function then which

of the following statement will be true for the statement given below?

obj3 = obj1 + obj2 ;

· obj2 will be passed as an argument to + operator whereas obj2 will drive the + operator

· obj1 will drive the + operator whereas obj2 will be passed as an argument

to + operator

· Both objects (obj1, obj2) will be passed as arguments to the + operator

· Any of the objects (obj1, obj2) can drive the + operator

c3 = c1 + c2 ; In the above statement (c3 = c1 + c2;), c1 is the object that is calling or driving the + operator. **c2** object is being passed as an argument to the + operator. So c1 and c2 objects are added by the + operator and resultant

Question No: 16 (Marks: 1) - Please choose one

Which one of the following is the declaration of overloaded pre-increment operator implemented as memberfunction?

· Class-name operator +() ;

· Class-name operator +(int) ;

· Class-name operator ++() ;

· Class-name operator ++(int) ;

Overloading Unary Operators

```
// Preincrement operator overloaded as a member function.
Date Date::operator++()
{
  helpIncrement();
  return *this;  // value return; not a reference return
}

// Postincrement operator overloaded as a member function.
// Note that the dummy integer parameter does not have a
// parameter name.
Date Date::operator++(int)
{
  Date temp = *this;
  helpIncrement();

  // return non-incremented, saved, temporary object
  return temp;   // value return; not a reference return
}
```

Question No: 17 (Marks: 1) - Please choose one

For cin, the source is normally a _____and destination can be _____

· File, native data type

· Disk, user-define type

· Keyboard, variable

· File, user-define type

For cin, the source is normally keyboard and the destination can be an ordinary variable i.e. native-data type variable. It could be some area of memory or our own data type, i.e. object for which we h

Question No: 18 (Marks: 1) - Please choose one

We can do condition compilation with pre processor directives.

· True

· False

All the preprocessor directives start with the sharp sign (#). We can also do conditional compilation with it.

Question No: 19 (Marks: 1) - Please choose one

The programs, in which we allocate static memory, run essentially on _____

· Heap

· System Cache

· None of the given options

· Stack

The programs, in which we allocate static memory, run essentially on stack

Question No: 20 (Marks: 1) - Please choose one

A template function must have at least ---------- or more arguments

· Zero

· One

· Two

· Three

The function arguments must contain at least one generic data type. Normal function declaration is: return_type function_name(argument_list)

Question No: 21 (Marks: 1) - Please choose one

The default value of a parameter can be provided inside the _____

· function prototype

· function definition

· both function prototype or function definition

· none of the given options

The default value of a parameter is provided inside the function prototype or function definition.

Question No: 22 (Marks: 1) - Please choose one

While calling function, the arguments are assigned to the parameters from _____

· left to right

· right to left

· no specific order is followed

· none of the given options

While calling function, the arguments are assigned to the parameters from left to right.

Question No: 23 (Marks: 1) - Please choose one

When an operator function is defined as member function for a binary Plus (+)

operator then the number of argument it take is/are

· Zero

· One

· Two

· N arguments

Operators as member functions

Aside from the operators which must be members, operators may be overloaded as member or non-member functions. The choice of whether or not to overload as a member is up to the programmer. Operators are generally overloaded as members when they:

change the left-hand operand, or

1. require direct access to the non-public parts of an object.

When an operator is defined as a member, the number of explicit parameters is reduced by one, as the calling object is implicitly supplied as an operand. Thus, binary operators take one explicit parameter and unary operators none. In the case of binary operators, the left hand operand is the calling object, and no type coercion will be done upon it.

Question No: 24 (Marks: 1) - Please choose one

new operator allocates memory from free store and return _____

· A pointer

· A reference

· An integer

· A float

new Operator (C++)

Allocates memory for an object or array of objects of type-name from the free store and returns a suitably typed, nonzero pointer to the objec

Question No: 25 (Marks: 1) - Please choose one

With user-defined data type variables (Objects), self assignment can produce____

· Syntax error not sure

· Logical error

· Link error

· Non of the given options

Question No: 26 (Marks: 1) – Write Simple Program

Assignment operator is used to initialize a newly declared object from existing object

· **True**

· False

Question No: 27 (Marks: 1) – Briefly define/Justify

When an object of a class is defined inside an other class then,

· Constructor of enclosing class will be called first

· Constructor of inner object will be called first

· Constructor and Destructor will be called simultaneously

· None of the given options

• ***A class can contain instances of other classes as its data members.*** • It is a way of reusing the code when we contain objects of our already written classes into a new class.

• The inner data members of the object are constructed and then the object itself.

The order of destruction of an object is reverse to this construction order, where the outer object is destroyed first before the inner data members.

• Initializer list is used to initialize the inner objects at the construction time.

• In C++, we can have structures or classes defined inside classes. Classes defined within other classes are called nested classes.

Question No: 28 (Marks: 1) – Brief answer required

In the member initializer list, the data members are initialized,

· From left to right

· From right to left

· In the order in which they are defined within class

· None of the given options

Question No: 29 (Marks: 1) - Brief answer required

"new" and "delete" keywords are _____in C++ language

· Built-in- Function

· Operators

· Memory Allocation Function

· None of the given options

Question No: 30 (Marks: 2) - Brief answer required

What are the two types of conversion for user-defined data types?

There are two **types of conversion**: implicit and explicit.

Question No: 31 (Marks: 2) - Brief answer required

Give the general syntax of class template.

The syntax of the template class is

template

class class-name()

{ definition of class };

Question No: 32 (Marks: 2) - Brief answer required

What is a constructor in class?

The name of this function is same as the name of the class,

having no return type. This function is called constructor.

Question No: 33 (Marks: 2) - Brief answer required

Is there a way to increase the size of already allocated memory chunk ? Can the same chunk be i ncreased or not?

Can the same chunk be increased or not? The answer is yes. we can reallocate the same memory with a new size according to our requirement. The function that reallocates the memory is **realloc**.

Question No: 34 (Marks: 3) - Write Program

What is the difference between structure and class?.

The ONLY DIFFERENCES between classes and structures are
1) classes DEFAULT to having private members. Structures DEFAULT to having public members. These defaults can be changed so classes can be made to work like structures and vice versa.

2) classes DEFAULT to inheriting privately from base classes. Structures DEFAULT to inheriting public from base classes. These defaults can be changed so classes can be made to work like structures and vice versa.

Question No: 35 (Marks: 3) - Write Program

How many arguments does binary member operator function and binary non-member operator function take?

When an operator function is defined as member function for a binary Plus (+)

operator then the number of argument it take is/are

Question No: 36 (Marks: 2) - Write Program

Find the error in the given code for (int i=0; imRows; i++)

{

for(int j=0; jumCols; j++)

{

elements[i , j] = m.elements[i][j];

}

}

Question No: 37 (Marks: 5) - Write Program

Write the C++ syntax for making a class friend of other class

Question No: 38 (Marks: 5) - Write Program

What is a template function? Give the general syntax of writing a template function

Question No: 39 (Marks: 10) - Write Program

What is Standard Template Library (STL) also describe its advantages?

The standard template library is the collection of functions of very common use. Their every day use is so important that two researchers wrote a whole library of these functions. This library is a part of the official standard of C++. It is called STL i.e. Standard Template Library. As a library, it is a tested code base. Some one has written, tested and compiled for the ultimate use of programmers. We can use these templates and can implement different concepts for our own data types. Equally is true about the use of the array data type. Our code will become very small with the use of this tested facility. Similarly, there is no bug or error in it. Thus, if we have a tested and tried code base, we should try our best to write programs by using it. STL is a lot of important code, pre-developed for us. It is available as a library. We can write programs by using it. Thus our programs will be small and error free

Question No: 40 (Marks: 10) - Write Program

Write a program which contains a class student
The class should contain two char pointer variables Name, and department
The class should further contain
constructors, overload the stream insertion operator (<<) for this class In main function create two objects and display these objects vuzs

#includestream>

#includenio>

#include stdlib> using namespace std; class student {

private:

char name[30] ;

char department[30] ;

public:

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ASSALAM O ALIKUM all fellows

ALL IN ONE CS201 Final term PAPERS & MCQz

SOLVED BY Farhan & Ali

BS (cs) 2nd sem

Hackers Group

Mandi Bahauddin

Remember us in your prayers

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Time: 120 min
Marks: 75
If we write a statement like **s2 = s1;** ___ will be the calling object and ____ will be passed to the = operator as an argument.

- ► s1, s1
- ► s1, s2
- ► **s2, s1**
- ► s2, s2

If we write a statement like *s2 = s1*; *s2* will be the calling object and *s1* will be passed to the = operator as an argument. P# 397
www.vuzs.net
cout << setfill('0') << setw(7) << 128 ;

- ► **0000128**
- ► 0128128
- ► 1280000
- ► 0012800

default alignment is from left due to this it first prints 4 Zeros(setw=7, digit=3 i.e 1-2-8,) 7-3=4 Zeros vuzs

The stream insertion and extraction operators are not already overloaded for _____

- ► Built-in data types
- ► **User-defined data types**
- ► Both built-in and user-defined types
- ► None of the given options

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Constructors can not be overloaded like ordinary functions.

- ► True
- ► **False**

The constructors can be overloaded. We can write as many constructors as we require. At one time, the compiler will call the correct version of the constructor".P# 323 these solutions are meant to host at vuzs site only

Overloaded new operator function takes parameter of type *size_t* and returns

- ► void (nothing)
- ► void pointer
- ► object pointer
- ► int pointer

Also note that the *new* operator returns a *void* pointer. Any *new* operator we write must have this parameter and return type.

Which of the following is the correct way to declare a variable x of integer type?

- ► x int ;
- ► integer x ;
- ► **int x;**
- ► x integer

Reserve words cannot be used as a variable name.

- ► **True**
- ► False

There are few data types in C language. These data types are reserved words of C language. The reserve words can not be used as a variable manes. P# 17

A template function must have at least ---------- generic data type

- ► Zero
- ► **One**
- ► Two
- ► Three

The function arguments must contain at least one generic data type. P# 499

Template functions can also be overloaded

- ► True
- ► **False**

We can write overloaded template functions as long as there is use of different number or type of arguments.. P # 503

We can not make a member function of a class as template function.

- ► True
- ► **False not sure**

When break statement is encountered in switch statement, it

- ► Stops the entire program
- ► **Stops the execution of current statement**
- ► Exits from switch statement
- ► None of the given options

We can also define a variable of user define data type (object) as static.

- ► **True**
- ► False

The declarator of Plus (+) member operator function is

- ► **Class-Name operator + (Class-Name rhs)**
- ► operator Class-Name + ( )
- ► operator Class-Name + (rhs)
- ► Class-Name operator + ( )

Let suppose

```
int a, b, c, d, e;
a = b = c = d = e = 42;
```

This can be interpreted by the complier as:

- ► a = (b = (c = (d = (e = 42))));
- ► (a = b = (c = (d = (e = 42))));
- ► **a = b = (c = (d = (e = 42)));**
- ► (a = b) = (c = d) = (e = 42);

What will be the range of numbers generated by function rand () % 9?

- ► 0 to 9
- ► 1 to 9
- ► **0 to 8**
- ► 1 to 8

When 6 divides any number, the remainder will always be less than 6. Ther result will be between therefore we will add 1. 1 + rand ( ) % 6;

Which of the following is the correct function call having array named *student* of 10 elements as a parameter.

- ► **addRecord(student[]) ;**
- ► addRecord(student) ;
- ► addRecord(student[10]) **;**
- ► addRecord(*student) ;

when we pass array we don't give limit of array

Example:

Pass array to function

```
#include<stdio.h>
  #include<conio.h>
  void read(int *,int);
  void dis(int *,int);

  void main()
  {
   int a[5],b[5],c[5],i;

   printf("Enter the elements of first list \n");
   read(a,5);
   printf("The elements of first list are \n");
   dis(a,5);
  }

  void read(int c[],int i)
  {
   int j;
   for(j=0;j<i;j++)
     scanf("%d",&c[j]);
   fflush(stdin);
  }

  void dis(int d[],int i)
  {
   int j;
   for(j=0;j<i;j++)
   printf("%d ",d[j]);
   printf("\n");
  }
```

Declaring structures does not mean that memory is allocated.
Example:

- ► **True**
- ► False

structures do not occupy any memory until it is associated with the structure variable

Identifier is a name that can be given to variables, labels and functions.

- ► **True**
- ► False

An 'Identifier' means any name that the user creates in his/her program. These names can be of variables, functions and labels

If a class A declares itself a friend of class B and a class B declares itself a friend of class C then

- ► Class A is also a friend of class C.
- ► Class B is also a friend of class A.
- ► **Class A is also a friend of class C if A declares C as its friend.**
- ► Class A is also a friend of class C if C declares A as its friend.

If we want a two-way relationship, OtherClass will have to declare ClassOne as a friend class, resulting in a complete two-way relationship

Which of the following statement is best regarding declaration of friend function?

- ► Friend function must be declared after public keyword.
- ► Friend function must be declared after private keyword.
- ► Friend function must be declared at the top within class definition.
- ► **It can be declared anywhere in class as these are not affected by the public and private keywords**.

Friend is a very strong statement. It is too strong to be affected by public or private we can put it anywhere in the class

A pointer is a special type of variable that contain _____

- ► **Memory Address**
- ► Data values
- ► Both Values and Memory
- ► None of given of options

Pointer is a special type of variable that contains a memory address.

When memory for a program is allocated at run time then it is called _____

- ► static memory allocation
- ► **dynamic memory allocation**
- ► stack memory allocation
- ► virtual memory allocation

When we create an object of the class at run time, it will allocate memory according to our requirement. So there is no waste of memory and the situations in which we want to store large data in small memory or vice versa are prevented. So we do dynamic memory allocation inside these classes.

What purpose do classes serve?

- ► Data encapsulation
- ► Providing a convenient way of modeling real-world objects
- ► Simplifying code reuse
- ► **All of the given options**

Which of the following function cannot be overloaded?

- ► Member functions
- ► Utility functions
- ► Constructor
- ► **Destructor**

The destructors can be summarized as The destructors cannot be overloaded. The destructors take no arguments. The destructors don't return a value

The following prototype of unary operator function indicates that it is _____ .
Date operator++(int)

- ► **Member functions of post increment operator**
- ► Member functions of pre increment operator
- ► Non-member functions of post increment operator
- ► Non-member functions of pre increment operator

Overloading Unary Operators

```
// Preincrement operator overloaded as a member function.
Date Date::operator++()
{
  helpIncrement();
  return *this;  // value return; not a reference return
}

// Postincrement operator overloaded as a member function.
// Note that the dummy integer parameter does not have a
```

```
// parameter name.
Date Date::operator++(int)
{
  Date temp = *this;
  helpIncrement();

  // return non-incremented, saved, temporary object
  return temp;   // value return; not a reference return
} // This paper was solved by vuzs Team and meant for hosting
at vuzs otherwise its stolen contents
```

Static variable which is defined in a function is initialized _____.

- ► **Only once during its life time**
- ► Every time the function call
- ► Compile time of the program
- ► None of the above

Once the static variables are created, they exist for the life of the program. They do not die.

In the member initialize list, the data members are initialized,

- ► **From left to right**
- ► From right to left
- ► In the order in which they are defined within class
- ► None of the given options

If we do not indent the code properly it will _____

- ► Be a syntax error
- ► Be a logical error
- ► **Not be an error at all**
- ► None of the given options

we Indent the code for better readability and understanding

Truth tables are used for analyzing _____.

- ► **logical expressions**
- ► arithmetic expressions
- ► both logical and arithmetic expressions
- ► none of the given options.

The truth tables are very important. These are still a tool available for analyzing logical expressions.

Static memory allocation is also known as _____

- ► Dynamic allocation
- ► **Compile time allocation**
- ► Run time allocation
- ► None of the given options

This type of memory static allocation. It is also known as compile time allocation.

(Marks: 1)

What does *getline()* member function of cin stream do?

Another member function of *cin* is *getline()*. It reads a complete buffer i.e. the number of character specified up to a delimiter we specify. We can write something like:

cin.getline(char *buffer, int buff_size, char delimiter = '\n')

(Marks: 1)

When memory is allocated dynamically using new operator within the constructor of class then what is an appropriate place to de-allocate the memory?

Whenever we allocate memory with the *new* operator, it is our responsibility to de-allocate this memory after the termination of the program. To do this de-allocation, we have an operator *delete*. To de-allocate the memory, allocated with *p = new int ;* we will write delete

(p) ;

It will not delete the *p* rather, it will send the memory gotten and pointed by *p* back to the free store.

(Marks: 2)

What will be the output of following code, if user input a number **123**?

```
int input ;
cin >> oct >> input;
cout << hex << input ;
```

(Marks: 2

What is memory leak?

suppose, the heap size is decreased as we had allocated memory from it despite the fact that it was never utilized. If this step of allocating memory and then destroy the pointer to this memory carries on then the size of the heap will going on to decrease. It may become of zero size. When there is no memory on heap, the computer will stop running and there may be a system crash. This situation is called a memory leak

(Marks: 3)

When we call calloc function to allocate memory and its return a NULL pointer what does it mean?

Calloc function takes two arguments. The first argument is the required space in terms of numbers while the second one is the size of the space
Now we have to see what happens when either we ask for too much memory at a time of non-availability of enough memory on the heap or we ask for memory that is available on the heap , but not available as a single chunk?. In this case, the call to calloc will fail. When a call to memory allocation functions fails, it returns a NULL pointer.

(Marks: 3)

Read the given code and explain code functionality.

```
Matrix :: Matrix ( const Matrix & m )
{
   numRows = m.numRows ;
   numCols = m.numCols ;
   elements = new ( double * ) [ numRows ] ;
   for ( int  i = 0 ; i < numRows ; i ++ )
{
      elements [ i ] = new double [ numCols ] ;
      for ( int j = 0 ; j < numCols ; j ++ )
            elements [ i ] [ j ] = m.elements [ i ] [ j ] ;
   }
}
```

(Marks: 3)

What is the keyword 'this' and what are the uses of 'this' pointer?

Whenever an object calls a member function, the function implicitly gets a pointer from the calling object. That pointer is known as *this* pointer. '*this*' is a key word. We cannot use it as a variable name. '*this*' pointer is present in the function, referring to the calling object.
this pointer points to the current object.

(Marks: 5)

What do you mean by garbage collection and how it works in JAVA and C++ ?

JAVA gives the concept of garbage collection with the use of references. Due to this garbage collection, we are free from the headache of de- allocating the memory. We allocate and use the memory. When it is no longer in use, JAVA automatically deletes (frees) it through garbage collection But in C and C++ languages, we have to take care of de-allocating the memory. In classes where we use dynamic memory, we have to provide destructors to free this memory. The languages keep evolving, new constructs will keep evolving in existing or new languages.

(Marks: 5)

Explain the concept of separation of interface from the implementation in the context of classes, using a real world example.
(Marks: 10)

Write a simple program using the **get()** member function of **cin** object reading a text of **30** characters from the keyboard, store them in an array and then using **put()** member function of **cout** object to display them on the screen.
(Marks: 10)

Overload the Binary Assignment (=) Operator.
Write a program which has a class **List**, This class should have Two data members, an array of integers **list[]** and an integer variable **length** (i.e. number of elements in the list).The class should further contain a default constructor, a **Print()** function which display the list and a Function**insert()** which insert an element in the list and Assignment (=) Operator function, which contain code for the assignment of one object to other. .
In main function define two objects **list1** and **list2** and use the statement **list2 = list1;** and use (call) **print** function with both objects

Created 2010/9 Final ....

ASSALAM O ALIKUM all fellows

ALL IN ONE CS201 Final term PAPERS & MCQz

SOLVED BY Farhan & Ali

BS (cs) 2nd sem

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Question No: 1(Marks: 1) - Please choose one
There are mainly ---------- types of software
► Two
► Three
► Four

► Five

Software is categorized into two main categories
System Software
Application Software

Question No: 2(Marks: 1) - Please choose one
When x = 7; then the expression x%= 2; will calculate the value of x as,
► 1
► 3
► 7
► 2

\Question No: 3(Marks: 1) - Please choose one
A pointer variable can be,
► Decremented only
► Incremented only
► Multiplied only
► Both 1 and 2

Question No: 4(Marks: 1) - Please choose one
setprecision is a parameter less manipulator.
► True
►False
Question No: 5(Marks: 1) - Please choose one
We can change a Unary operator to Binary operator through operator overloading.
►False
► True
Question No: 6(Marks: 1) - Please choose one
delete operator is used to return memory to free store which is allocated by the new operator
► True
►False
The objects are created with the new operator on free store, they will not be destroyed and memory will not be de-allocated unless we call delete operator to destroy the objects and de-allocate memory.
Question No: 7(Marks: 1) - Please choose one
When we do dynamic memory allocation in the constructor of a class, then it is necessary to provide a destructor.
► True
►False
whenever we have a class in which the constructor allocates dynamic memory, it is necessary to provide a destructor that frees the memory.
Question No: 8(Marks: 1) - Please choose one
What is the functionality of the following statement?
String str[5] = {String("Programming"), String("CS201")};
► Default constructor will call for all objects of array
► Parameterized constructor will call for all objects of array
► Parameterized constructor will call for first 2 objects and default constructor for remaining objects
► Default constructor will call for first 3 objects and Parameterized constructor for remaining objects
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Question No: 9(Marks: 1) - Please choose one

What is the sequence of event(s) when allocating memory using new operator?
► Only block of memory is allocated for objects
► Only constructor is called for objects
► Memory is allocated first before calling constructor
► Constructor is called first before allocating memory
.
If a single object is allocated, *operator new* is called to allocate memory, and then the constructor is called to initialize the object.
· If an array of objects is allocated, *operator new[]* is called to allocate memory for the whole array, and then the constructor is called for each element of the array.
· When a single object is deleted, the destructor for the object is called first, and then *operator delete* is called to free the memory occupied by the object.
· When an array of objects is deleted, the destructor for each element of the array object is called first, and then *operator delete[]* is called to free the memory occupied by the array.

Question No: 10(Marks: 1) - Please choose one
Deleting an array of objects without specifying [] brackets may lead to memory leak
► True
►False

Question No: 11(Marks: 1) - Please choose one
Which of the following data type will be assumed if no data type is specified with constant?
► short
► float
► int
► double
Question No: 12(Marks: 1) - Please choose one

There is an array of characters having name ‘course’ that has to be initialized by string ‘programming’ which of the following is the correct way to do this,
i. course[] = {‘p’, ’r’, ’o’, ’g’, ’r’, ’a’, ’m’, ’m’, ’i’, ’n’, ’g’};
ii.course[] = ‘programming’ ;
iii. course[12] = “programming” ;
iv. course = “programming” ;
Choose the correct options.
► (i) and (ii) only
► (i) and (iv) only
► (i) and (iii) only
► (ii) and (iii) only

Question No: 13(Marks: 1) - Please choose one

What will be the correct syntax of the following statement?
ptr is a constant pointer to integer.

► const int *ptr ;
► const *int ptr ;
► int const *ptr ;
► int *const ptr ;

The keyword const for pointers can appear before the type, after the type, or in both places. The following are legal declarations:

```
const int * ptr1;      /* A pointer to a constant integer:
                          the value pointed to cannot be changed  */
int * const ptr2;      /* A constant pointer to integer:
                          the integer can be changed, but ptr2
                          cannot point to anything else          */
const int * const ptr3; /* A constant pointer to a constant integer:
                          neither the value pointed to
                          nor the pointer itself can be changed   */
```

Declaring an object to be const means that the this pointer is a pointer to a const object. A const this pointer can by used only with const member functions vuzs.net

Question No: 14(Marks: 1) - Please choose one

Overloaded member operator function is always called by _____

► Class
► Object
► Compiler
► Primitive data type

As discussed in the example of overloaded functions, the automatic part is also there. But we wrote all those functions separately. Here the automatic part is even deeper. In other words, we write one template function without specifying a data type. If it is to be called for *int* data type, the compiler will itself write an *int* version of that function. If it is to be called for double, the compiler will itself write it. This does not happen at run time, but at compile time. The compiler will analyze the program and see for which data type, the template function has been called. According to this, it will get the template and write a function for that data type. P# 498

Question No: 15(Marks: 1) - Please choose one

Loader loads the executable code from hard disk to main memory.

► True
►False

Loader fter a executable program is linked and saved on the disk and it is ready for execution. We need another process which loads the program into memory and then instruct the processor to start the execution of the program from the first instruction (the starting point of every C program is from the main function). This processor is known as loader. P# 13

Question No: 16(Marks: 1) - Please choose one

Which of the following is the correct C++ syntax to allocate space dynamically for an array of 10 int?

► new int(10) ;
► new int[10] ;

► int new(10) ;
► int new[10];

For example, we want to allocate an array of 10 ints dynamically. Then the statement will be like this: int *iptr; iptr = new int[10]; P# 332

Question No: 17(Marks: 1) - Please choose one

The prototype of friend functions must be written ____ the class and its definition must be written ____

► inside, inside the class
► inside, outside the class
► outside, inside the class
► outside, outside the class

So their definition will be always outside the class. However, the prototype of the function will be written in the class. P#346

Question No: 18(Marks: 1) - Please choose one

Like member functions, _____ can also access the private data members of a class.

► Non-member functions
► Friend functions
► Any function outside class
► None of the given options

If a data is private, it will be available only to member functions of the class. No other function outside the class (except friend functions) can access the private data. vuzs.net P# 320

Question No: 19(Marks: 1) - Please choose one

To perform manipulation with input/output, we have to include _____ header file.

► iostream.h
► stdlib.h
► iomanip.h
► fstream.h

To do stream manipulations, we have to include a header file having the name *iomanip.h*. We can understand that *iomanip* is a short hand for input output manipulation. P# 427

Question No: 20(Marks: 1) - Please choose one

The endl and flush are _____

► Functions
► Operators
► Manipulators
► Objects

Similarly *flush* was a manipulator for which we could write *cout* << *flush* that means flushing the output buffer. So it manipulates the output.

P # 435 / 436

Question No: 21(Marks: 1) - Please choose one

If we want to use stream insertion and extraction operators with _____ then we have to overload these operators.

► int, float, double

► objects of class
► int, float, object
► int, char, float

stream extraction operator is used with different data types of int, double and float. The three lines given above can be written in one cascading line: cin >> i >> d >> f;

In order to use these insertion (<<) and extraction (>>) operators with classes, we have to overload these operators. *www.vuzs.net*

Question No: 22(Marks: 1) - Please choose one

The static data members of a class can be accessed by _____
► only class
► only objects (not sure) .....
► both class and objects
► none of given options

Question No: 23(Marks: 1) - Please choose one

Classes defined inside other classes are called _____ classes
► looped
► nested
► overloaded
► none of the given options.

we can have structures or classes defined inside classes. Classes defined within other classes are called nested classes

Question No: 24(Marks: 1) - Please choose one

Which value is returned by the destructor of a class?
► A pointer to the class.
► An object of the class.
► A status code determining whether the class was destructed correctly
► Destructors do not return a value.

Destructors obey the following syntactical requirements:

a destructor's name is equal to its class name prefixed by a tilde;
a destructor has no arguments;
a destructor has no return value.

Question No: 25(Marks: 1) - Please choose one

Consider the following code segment
```
class M {
 friend int operator!(const M &);
...
};
!s // code of line implies that operator!(s)
...
```
Let assume if s is an object of the class then function is implemented as _____

► Member function
► Non-member function
► Binary operator function
► None of the given options

None of the given options

Question No: 26(Marks: 1) - Please choose one

When the compiler overloads the assignment (=) operator by default then _____

► compiler does member wise assignment.

► compiler does not allow default overload of assignment (=) operator
► member of the class are not assigned properly
► None of the given options

Assignment Operator

At first, we ascertain whether there is need of an assignment operator or not? It is needed when we are going to assign one object to the other, that means when we want to have expression like a = b. C++ provides a default assignment operator. This operator does a member-wise assignment.

Question No: 27(Marks: 1) - Please choose one

If text is a pointer of class String then what is meant by the following statement?
```
text = new String [5];
```
► Creates an array of 5 string objects statically
► Creates an array of 5 string objects dynamically
► Creates an array of pointers to string
► Creates a string Object

Question No: 28(Marks: 1) - Please choose one

Static variable which is defined in a function is initialized _____.

► Only once during its life time
► Every time the function call
► Compile time of the program
► None of the above

When you declare a static variable (native data type or object) inside a function, it is created and initialized only once during the lifetime of the program

Question No: 29(Marks: 1) - Please choose one

The appropriate data type to store the number of rows and is_____.

► floatcolums of the matrix
► int
► char
► none of the given options.

Int is right becuase columns and row cannot be in fractions

Question No: 30(Marks: 1) - Please choose one

Copy constructor becomes necessary while dealing with _____allocation in the class.

► Dynamic memory
► Static memory
► Both Dynamic and Static memory
► None of the given options

Copy constructor becomes necessary while dealing with dynamic memory allocation in the class

Question No: 31(Marks: 1)

What is drawback of writing the definitions of all the functions before main function?

Question No: 32(Marks: 1)

How do we provide the default values of function parameters?

Question No: 33(Marks: 2)

What is difference between endl and \n?

Question No: 34(Marks: 2)

When does an object get destroyed?

Question No: 35(Marks: 3)

What is the difference between structure and class?

Question No: 36(Marks: 3)

What will be the output of following functions if we call these functions three times?

1)

```
void func1(){
int x = 0;
x++;
cout << x << endl;
```

```
}
2)
void func2(){
static int x = 0 ;
x++;
cout << x << endl ;
}
```

Question No: 37(Marks: 3)

Why stream insertion and stream extraction operators cannot be overloaded as member functions?

Question No: 38(Marks: 5)

What is difference between Unary and binary operators and how they can be overloaded?

Question No: 39(Marks: 5)

What steps we must follow to design good program?

Question No: 40(Marks: 10)

Write the program that inputs an octal number from the user and then display the entered octal number into hexadecimal number using manipulators (parameter-less, parameterized) and member function of input/output streams.

Question No: 41(Marks: 10)

Develop a class Vector having two data members; x and y.

The class should also provide the following Overloaded operator capabilities.

a) Overload the addition operator(+) to add two Vectors

b) Overload the assignment operator(=) to assign Resultant Vector

c) Write function Display() to display x, y coordinates

Note:Addition of vector Let suppose there are two vectors A and B with their x, y co

Remember us in your prayers

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CS201 – Introduction to Programmming
Solved Subjective Questions
From spring 2010 Final Term Papers
By vuZs Team

Question No: 1 (Marks: 2)

Write a declaration statement for an array of 10 elements of type float. Include an initialization statement of the first four elements to 1.0, 2.0, 3.0 and 4.0.

Answer:
float floatArry[10] = {1.0,2.0,3.0,4.0};

Question No: 2 (Marks: 2)

Write the general syntax for the declaration of pre-increment and post-increment member operator function.

Answer:
Classname operator ++(); ---- pre increment
Classname operator ++(int) ---- post increment

Question No: 3 (Marks: 2)

Give the general syntax of class template.

Answer:
template
class myclass { ---} ;

Question No: 4 (Marks: 2)

What is a truth Table?

Answer:
There are some areas where the decision structures become very complicated. Sometimes, we find it difficult to evaluate a complicated logical expression. Sometimes the logic becomes extremely

complicated so that even writing it as a simple syntax statement in any language. It becomes complicated to determine what will be evaluated in what way. We know the concept of truth table. The truth tables are very important. These are still a tool available for analyzing logical expressions. We will read logic design in future, which is actually to do with chips and gates. How we put these things together.

Question No: 5 (Marks: 2)

What will be the output of following code, if user input a number 123?

```
int input ;
cin >> oct >> input;
cout << hex << input ;
```

Answer:

53

Rational: it will take 123 as octal and print it in hex form which is 53.

Question No: 6 (Marks: 2)

What is principle of friendship in the context of functions and classes?

Answer:
Class can declare a friend function and someone from outside the class cannot declare itself friend of a class.
A friend function can access the private variables of class just like a member function

Question No: 7 (Marks: 2)

How many arguments a Unary Operator take? Can we make a binary operator as unary operator?

Answer:
Unary operator takes only one argument like i++ or i— (Post increment or post decrement operators for integers) or ++i,--i (Pre increment or pre decrement operators for integers) ,we can not make Unary operator as binary or binary as Unary operator.

Question No: 8 (Marks: 2)

Which arithmetic operators cannot have a floating point operand?

Answer:
Modulus operator:
This operator can only be used with integer operands ONLY

Question No: 9 (Marks: 2)

What are manipulators? Give one example.

Answer:
The manipulators are like something that can be inserted into stream, effecting a change in the behavior. For example, if we have a floating point number, say pi (л), and have written it as float pi = 3.1415926 ; Now there is need of printing the value of pi up to two decimal places i.e. 3.14. This is a formatting functionality. For this, we have a manipulator that tells about width and number of decimal points of a number being printed.

Question No: 10 (Marks: 2)

Write down piece of code that will declare a matrix of 3x3. And initialize all its locations with 0;

Answer:
int matrix [3] [3] ;

include<iostream.h>

```
main () {
    int matrix [3][3];
    int inivalue = 0;

    for (int a=0;a<3;a++)
    { for (int b = 0;b<3;b++)
   { matrix[a][b]= inivalue;
    cout<<matrix[a][b]<<endl;}}
}
```

Question No: 11 (Marks: 2)

What is the difference between switch statement and if statement.

Answer:
The "If" statement is used to select among two alternatives. It uses a Boolean expression to decide which alternative should be executed. The switch statement is used to select among multiple alternatives. It uses an int expression to determine which alternative should be executed.

Question No: 12 (Marks: 2)

How can we initialize data members of contained object at construction time?

Answer:
Initializer list is used to initialize the contained objects at the construction time.

Question No: 13 (Marks: 2)

Can we overload *new* and *delete* operators?

Answer:
Yes, it is possible to overload new and delete operators to customize memory management. These operators can be overloaded in global (non-member) scope and in class scope as member operators.

Question No: 14 (Marks: 2)

Suppose there is a template function 'func' having argument of type U and return type T. What will be the C++ syntax to call this function, passing a variable 'x' of type double and returning an int type?

Answer:

```
template <class T, class U>
T func (T a, U b) {
  return (a<b?a:b);
}
calling
int  i;
double x;
x = func<int,double> (j,l);
```

Question No: 15 (Marks: 2)

Which variable will be used in inner code block if we have the same names of variable at outer code block and inner code block?

Answer:
Simply: variable of the inner code is use in the inner code block.

Question No: 16 (Marks: 2)

What is the benefit of reference and where can we use it?

Answer:
In references we give the memory address of the object, due to references we pass values without making the copy. Hence, when we have many values & we want efficiency we use references to avoid copy.

Question No: 17 (Marks: 2)

Write the C++ code for the declaration of overloaded stream insertion and stream extraction operator for the object d of type Date.

Answer:
Date operator >> (date & d1){
cout<<d1.day<<"-"<<d1.month<<"-"<<d1.year;
}

Question No: 18 (Marks: 2)

What is difference between endl and \n?

Answer:
Endl is manipulator and it inserts new line character and flushes the stream.

\n is control character which is used to insert line break.

Question No: 19 (Marks: 2)

What does code optimization mean?

Answer:
It is process by which we make our code such a way that it improves the speed of program. By use of optimization we refine program codes in such a way that it run faster and consume less memory. We do it in such a way that output quality is not compromised.

Question No: 20 (Marks: 3)

How is the following cout statement interpreted by compiler?

cout << a << b << c ;

Answer:
It will give a compiler error because a,b,c are not declared.

Question No: 21 (Marks: 3)

Suppose an object of class A is declared as data member of class B.

(i) The constructor of which class will be called first?
Answer: A
(ii) The destructor of which class will be called first?
Answer: B

Question No: 22 (Marks: 3)

What will be the output of following functions if we call these functions three times?

```
1)
void func1(){
int x = 0;
x++;
cout << x << endl;
}
```

Answer:

1
1
1
2)
void func2(){
static int x = 0 ;
x++;
cout << x << endl ;
}

Answer:
1
2
3

Question No: 23 (Marks: 3)

If is not available in the system then what does calloc/malloc and new operator return?

Answer:
calloc/malloc and new operator return returns a null pointer to indicate that no memory is available

Question No: 24 (Marks: 3)

What is the keyword 'this' and what are the uses of 'this' pointer?

Answer:
'this' is use to refer the current class member without using the name of the class.

Question No: 25 (Marks: 3)

Which one (copy constructor or assignment operator) will be called in each of the following code segment?

1) Matrix m1 (m2);
2) Matrix m1, m2;
m1 = m2;
3) Matrix m1 = m2;

Answer:

1) Matrix m1 (m2); copy constructor
2) Matrix m1, m2;
m1 = m2; assignment operator
3) Matrix m1 = m2; assignment operator

Question No: 26 (Marks: 3)

What will be the output of following function if we call this function by passing int 5?

template T reciprocal(T x) {return (1/x); }

Answer:

0
The output will zero as 1/5 and its .05 but conversion to int make it zero
Above is prototype of template class so assume passing an int and returning an int

Question No: 27 (Marks: 3)

Identify the errors in the following member operator function and also correct them.

```
math * operator(math m);
math * operator (math m)
{
    math temp;
    temp.number= number * number;
    return number;

}
```

Answer:
The errors are in the arguments of the member operation function and also in the body of operator member function.
Correct function should be

```
math *operator (math *m)
{
    math temp;
```

```
    temp = m;
    temp.number= number * number;
    return temp.number;

}
```

Question No: 28 (Marks: 3)

What are the limitations of the friendship relation between classes?

Answer:
friendship relation between classes is a one way relation that is if one class declare friend another class then the another class is the friend of first class but not the first class if the friend of another class.

Question No: 29 (Marks: 3)

Define static variable. Also explain life time of static variable?

Answer:
When you declare a static variable (native data type or object) inside a function, it is created and initialized only once during the lifetime of the program.

Question No: 30 (Marks: 5)

What is difference between Unary and binary operators and how they can be overloaded?

Answer:
Unary operator takes one argument.
a ++ is an example of unary operator

Binary take two operators
+,-,* are example of binary operators
Overloaded binary operator may return any type

Here is general syntax of overloading
Return-type operator symbol (parameters);

Operator is keyword

Question No: 31 (Marks: 5)

What steps we must follow to design good program?

Answer 1:

Hence to design a program properly, we must:
- Analyze a problem statement, typically expressed as a word problem.
- Express its essence, abstractly and with examples.
- Formulate statements and comments in a precise language.
- Evaluate and revise the activities in light of checks and tests and
- Pay attention to detail.

Answer 2:

Details: we must check very details of any program. It is very important aspect of any program. We must pay complete attention to calculation.
We must give attention to logic and its flow should be smooth.

Reusable: We must write program in such a way that we can reuse them in other program. Like we define function in such a way that in future if we need any similar kind of function is requires in that case we can easily modify or reuse it.

Comments: we write the details of important steps in the form of comments. We should use comments in such a way if any body else wanted to reuse or debug or codes he can easily understand it.

Code readability: We should use Tab and spaces so codes are easily readable.

User interface: we make interface user friendly. Use polite prompts for user while take input.

Question No: 32 (Marks: 5)

Write a program which defines five variables which store the salaries of five employees, using setw and setfill manipulators to display all these salaries in a column.

Note: Display all data with in a particular width and the empty space should be filled with character x

Output should be displayed as given below:

xxxxxx1000

xxxxxx1500

xxxxx20000

xxxxx30000

xxxxx60000

Answer:

```
#include <iostream.h>
#include <iomanip.h>
main(){
      int sal1 =1000;
      int sal2 =1500;
      int sal3 =20000;
      int sal4 =30000;
      int sal5 =60000;


cout << setfill ('x') << setw (10);
cout<< sal1<<endl;
cout << setfill ('x') << setw (10);
cout<< sal2<<endl;
cout << setfill ('x') << setw (10);
cout<< sal3<<endl;
cout << setfill ('x') << setw (10);
cout<< sal4<<endl;
cout << setfill ('x') << setw (10);
cout<< sal5<<endl;
int i=0;
cin>>i; // to stop the screen to show the output
}
```

Question No: 33 (Marks: 5)

Suppose we have the following class.

```
class Matrix
{
private:
```

int Elements[3][3];
};

Write the operator function of stream extraction operator (>>) for this class.

Answer:
Element operator >> (Element &element){
cout<<element[0][0]<<element[0][1]<<element[0][2];
cout<<element[1][0]<<element[1][1]<<element[1][2];
cout<<element[2][0]<<element[2][1]<<element[2][2];
}

Question No: 34 (Marks: 5)

What is meant by user interface and class interface in C++ ? And what role a class interfaces can play in user interface [Marks 5]

Answer:

Question No: 35 (Marks: 5)

Write the general syntax of a class that has one function as a friend of a class along with definition of friend function.

Answer:
class frinedclass{
public:
friend int compute(exforsys e1)
};
Int compute(exforsys e1)
{
//Friend Function Definition which has access to private data
return int(e1.a+e2.b)-5;
}

Question No: 36 (Marks: 5)

What are the advantages and disadvantages of using templates?

Answer:
Many things can be possible without using templates but it does offer several clear advantages not offered by any other techniques:

Advantages:

- Templates are easier to write than writing several versions of your similar code for different types. You create only one generic version of your class or function instead of manually creating specializations.
- Templates are type-safe. This is because the types that templates act upon are known at compile time, so the compiler can perform type checking before errors occur.
- Templates can be easier to understand, since they can provide a straightforward way of abstracting type information.
- It helps in utilizing compiler optimizations to the extreme. Then of course there is room for misuse of the templates. On one hand they provide an excellent mechanism to create specific type-safe classes from a generic definition with little overhead.

Disadvantages:
On the other hand, if misused

- Templates can make code difficult to read and follow depending upon coding style.
- They can present seriously confusing syntactical problems esp. when the code is large and spread over several header and source files.
- Then, there are times, when templates can "excellently" produce nearly meaningless compiler errors thus requiring extra care to enforce syntactical and other design constraints. A common mistake is the angle bracket problem.

Question No: 37 (Marks: 5)

Suppose a program has a math class having only one data member number.
Write the declaration and definition of operator function to overload + operator for the statements of main function.

```
math obj1, obj2;
obj2= 10 + obj1 ;
```

Answer:

```
#include
math
{
mth operator + (obj1,int x)
```

```
{

number temp;
temp=obj1.number+x;
return temp.number;
}
}
```

Question No: 38 (Marks: 5)

Write a program which defines three variables of type double which store three different values including decimal points, using setprecision manipulators to print all these values with different number of digits after the decimal number.

Answer:

```
#include
#include
main () {
double a = 12.12345;
double b = 13.123456;
double c = 14.1234567;
cout << setprecision (5) << a << endl;
cout << setprecision (2) << a << endl;
cout << setprecision (3) << a << endl;
}
```

Question No: 95 (Marks: 5)

Let we have a class,

```
class String
{
private:
char  buf[25];
};
```

Write code for assignment (=) operator function which assign one String object to other object. Your code should also avoid self assignment

Answer:

```
void String::operator = ( const String &other )
 { int length ;
 length = other.length();
delete buf;
```

```
buf = new char [length + 1];
strcpy( buf, other.buf ); }
```

Question No: 40 (Marks: 5)

Read the given below code and explain what task is being performed by this function

```
Matrix :: Matrix ( int row , int col )
{
   numRows = row ;
   numCols = col ;
   elements = new ( double * ) [ numRows ] ;
   for ( int  i = 0 ; i < numRows ; i ++ )
{
      elements [ i ] = new double [ numCols ] ;
      for ( int j = 0 ; j < numCols ; j ++ )
          elements [ i ] [ j ] = 0.0 ;
    }
}
```

Hint : This function belong to a matrix class, having
Number of Rows = numRows
Number of Columns = numCols

Answer:

In the above mentioned code, first of all programmer call the constructor who have two parameters for the number of rows & columns in the matrix. Then this constructor also dynamically allocates the memory for the elements of the matrix & also initializes the value of the all elements of matrix with 0.0