

Topics: operator overloading, references, dynamic objects, scope resolution operator, function overloading , constructor overloading, copy constructor, overloading copy constructor.

Q1- On Friend Function -

Create these three classes - student, lib, degree.

variables:

student will have these variables : rn, m1,m2

lib will have these variables: numofbooks

degree will have these variables: char award_degree;

Functions:

Create set fun in all these classes.

Create a fun get in all these classes.

objects:

Create student_obj and assign value 1,45,60

Create lib_obj and assign value 2

Create degree_obj and do not assign any value.

Friend function:

create a friend fun "check". This friend fun will be called like this

```
degree_obj = check(student_obj, lib_obj);
```

```
degree_obj.get(); // this will print 'y' or 'n'
```

It will check if total marks >50 in student_obj and numofbooks == 0 in lib_obj. If yes, then it will set award_degree ='y' in degree_obj.

Q2- What is operator overloading? Which function is used for operator overloading?
Why is operator overloading done ?

Q3- **On operator overloading** using member operator function

Create a class student. Write a program to overload + , = , pre-increment, post-increment operators for this class using member operator function.

Inside main create three objects and do these operations.

```
Obj1.set(1,20,30);
```

```
obj2.set(2, 5, 6);
```

```
Create obj3;
```

```
obj3= obj1+obj2;
```

```
obj3.get();
```

```
obj3=obj2=obj1;
```

```
obj3.get();
```

```
obj3 = ++obj2;
```

```
obj3.get()
```

```
obj2.get()
```

```
obj3 = obj2++;
```

```
obj3.get();
```

```
obj2.get();
```

Q4- On operator overloading using friend operator function

Create a class student. Write a program to overload +, pre-increment, post-increment operators for this class using a **friend operator function**.

Note: In this question a friend operator function is used for a single class. But it can be used for more than one class.

Inside main create three objects and do these operations.

```
Obj1.set(1,20,30);
```

```
obj2.set(2, 5, 6);
```

```
Create obj3;
```

```
obj3= obj1+obj2;
```

```
obj3.get();
```

```
obj3=obj2=obj1;
```

```
obj3.get();
```

```
obj3 = ++obj2;
```

```
obj3.get()
```

```
obj2.get()
```

```
obj3 = obj2++;
```

```
obj3.get();
```

```
obj2.get();
```

Q5- What are references in C++ ? What is the difference between a reference and a pointer ? Give an example of how you will create a reference for a variable in c++ ?

Q6- WAP to swap two variables using **Call by value, Call by address, and Call by Reference ?**

Q7- What are dynamic objects? In how many ways can you create Dynamic objects in C++ ?

Q8- On **Dynamic Objects using new operator.**

WAP to create a class student. Create an array of objects dynamically using new operator. The number of objects in array should be input by user during runtime.

During runtime , input the value 3 and call set , get, add fun for these 3 dynamic objects.

Q9- What is a **Scope resolution operator**? List three uses of scope resolution operator.

Q10- What is function overloading? Why is it done? What rule must be followed for function overloading?

Q11- On **Function Overloading**

Do not use any class. Overload a simple sum function three times without any class.

Q12- On **Function overloading with class**

Overload the set function two time in student class.

Q13- What is constructor overloading ? Why is it done ?

Q14- on **Constructor overloading.**

Create the student class. Create two constructors for this class. One with parameters and other without parameters. Create two objects using different constructors.

Q15- What is a copy constructor? How many copy constructors are there ? What are the situations in which a copy constructor is called?

Q16- What is a default copy constructor? What is the need for overloading default copy constructor?

Q17- On **overloading copy constructor**

create a class student. Overload the default copy constructor for this class.

Create two objects obj1, obj2.

Copy obj1 to obj2 like this -

obj2=obj1; //overloaded copy const will be called.

Q18- Write some differences between calloc and malloc.