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FACULTY OF ENGINEERING & TECHNOLOGY

CSPS103: Object Oriented Programming

Lecture-12

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OBJECTIVES

In this lecture, you will learn to:

- **Scope Resolution operator**
- **Static**
  - **Static Field**
  - **Static Member Functions**

SCOPE RESOLUTION OPERATOR

❑Member functions can be defined within the class definition or separately using scope resolution operator (::).

❑Defining a member function within the class definition declares the function inline, even if you do not use the inline specifier.

❑Defining a member function using scope resolution operator uses following declaration

return-type class-name::func-name(parameter- list)
{
// body of function
}


```
Class myclass {
int a;
public:
void set_a(intnum); //member function declaration
int get_a( ); //member function declaration
};
//member function definition outside class using scope resolution operator
void myclass :: set_a(intnum)
{
a=num;
}
int myclass::get_a( ) {
return a;
}
```

STATIC

What is static

- In C++, static is a keyword or modifier that belongs to the type not instance.
- So instance is not required to access the static members.
- In C++, static can be field, method, constructor, class, properties, operator and event.

STATIC FIELD

- A field which is declared as static is called static field.

- Unlike instance field which gets memory each time whenever you create object, there is only one copy of static field created in the memory.

- It is shared to all the objects.

PROGRAM : STATIC FIELD

```
#include <iostream.h>
class Account {
   public:
      int accno; //data member (also instance variable)
      string name; //data member(also instance variable)
      static float rateOfInterest;
      Account(int accno, string name)
       {
           this->accno = accno;
          this->name = name;
       }
      void display()
       {
          cout<<accno<< "<<name<< " "<<rateOfInterest<<endl;
       }
};
float Account::rateOfInterest=6.5;
int main(void) {
    Account a1 =Account(201, "Sanjay"); //creating an object of Employee
    Account a2=Account(202, "Nakul"); //creating an object of Employee
    a1.display();
    a2.display();
    return 0;
}
```

STATIC MEMBER FUNCTIONS

- Member functions may also be declared as static.
- They may only directly refer to other static members of the class.
- A static member function can be called using the class name instead of its objects as follows:

class name :: function name

PROGRAM : STATIC CLASS MEMBERS

//Program showing working of static class members

```
#include <iostream.h>
#include<conio.h>
class static_type {
static int i; //static data member
public:
static void init(int x) {i = x;} //static member function
void show() {cout << i;}};
int static_type :: i; // static data member definition
int main(){
static_type::init(100); //Accessing static function
static_type x;
x.show();
return 0;
}
```

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MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q1. Which of the following is correct about static variables?

a) Static functions do not support polymorphism

b) Static data members cannot be accessed by non-static member functions

c) Static data members functions can access only static data members

d) Static data members functions can access both static and non-static data members

Multiple Choice Question:

Q2. Const qualifier can be applied to which of the following?

i) Functions inside a class

ii) Arguments of a function

iii) Static data members

iv) Reference variables

a) i, ii and iii

b) i, ii, iii, and iv

c) ii, iii and iv

d) i only

Multiple Choice Question:

Q3. Which functions of a class are called inline functions?

a) All the functions containing declared inside the class

b) All functions defined inside or with the inline keyword

c) All the functions accessing static members of the class

d) All the functions that are defined outside the class

Multiple Choice Question:

Q4. Pick the incorrect statement about inline functions in C++?

a) They reduce function call overheads

b) These functions are inserted/substituted at the point of call

c) Saves overhead of a return call from a function

d) They are generally very large and complicated function

Multiple Choice Question:

Q5. Inline functions are avoided when _____

a) function contains static variables

b) function have recursive calls

c) function have loops

d) all of the mentioned

Summary

In this lecture, you learned that:

- Concept of scope resolution operator
- Concept of static

    1) Static Field
    2) Static Member Functions