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FACULTY OF ENGINEERING & TECHNOLOGY

CSPS103: Object Oriented Programming

Lecture-30

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OBJECTIVES

In this lecture, you will learn to:

- ❖ **Abstract class**
- ❖ **Example of Abstract class**

ABSTRACT CLASS

- When a class contains atleast one pure virtual function, it is referred to as an abstract class.
- An abstract class contains atleast one function for which no body exists, it is, technically, an incomplete type.
- No objects of that class can be created.
- Thus, abstract classes exist only to be inherited.

EXAMPLE : ABSTRACT CLASS

```
#include <iostream.h>
 class Shape
{
    public:
    virtual void draw()=0;
};
 class Rectangle : Shape
{
    public:
     void draw()
    {
        cout < <"drawing rectangle..." < <endl;
    }
};
```

EXAMPLE : ABSTRACT CLASS (Contd.)

```
class Circle : Shape
{
    public:
     void draw()
    {
        cout <<"drawing circle..." < <endl;
    }
};
int main( ) {
    Rectangle rec;
    Circle cir;
    rec.draw();
    cir.draw();
   return 0;
}
```

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Multiple Choice Question:

Q1. Where does the abstract class is used?

a) base class only

b) derived class

c) both derived & base class

d) virtual class

Multiple Choice Question:

Q2. What is an abstract class in C++?

a) Class specifically used as a base class with atleast one virtual functions

b) Class specifically used as a base class with atleast one pure virtual functions

c) Class from which any class is derived

d) Any Class in C++ is an abstract class

Multiple Choice Question:

Q3. What is a pure virtual function in C++?

a) A virtual function defined in a base class

b) A virtual function declared in a base class

c) Any function in a class

d) A function without definition in a base class

Multiple Choice Question:

Q4. Which is the correct syntax of defining a pure virtual function?

a) pure virtual return_type func();

b) virtual return_type func() pure;

c) virtual return_type func() = 0;

d) virtual return_type func();

Multiple Choice Question:

Q5. Which is the correct statement about pure virtual functions?

a) They should be defined inside a base class

b) Pure keyword should be used to declare a pure virtual function

c) Pure virtual function is implemented in derived classes

d) Pure virtual function cannot implemented in derived classes

Summary

In this lecture, you learned that:

- Class is made abstract by declaring at least one of its functions as <>strong>pure virtual function.
- A pure virtual function is specified by placing "= 0" in its declaration.
- Its implementation must be provided by derived classes.