CHAPTER NO 4

Instructor:

MUHAMMAD NAVEED

Created By:

ARSLAN AHMAD SHAAD || MUHAMMAD BILAL

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Classes and Objects

Q: What is a Class?

Class is a template to design objects. A class can be declared by specifying the keyword "class". By convention, first letter of class name is uppercase. A class has a class signature, data members and methods.

Class can be viewed as collection of data and code to operate that data.

Syntax:

Class identifier

{

 // body of class

}

Example:

class student{

        String Name;   //Data Members

        int RollNo;   //Data Members

public void main SetName(stringn){   //Method

        Name = n;

        }

public string GetName()

```
 {

   return Name;

 }

}
```

Q: Define class fields?

A class field is associated with the class in which it is defined as rather than instance of class. A public static field is essentially a global variable.

Example:

```
public class Circle{

   //Class field

    Public static final double PI = 3.1428;
```

Q: What are class methods?

Class methods are also declared with static keyword.

A class method cannot use any instance field or method, because it is related to class.

Example:

```
//Class method

 public static double radian to degree(degree rad){

}
```

Q: What is Object?

Object is an instance of class. Object is a real-world entity. (.) dot operator is used to access data members and methods of object.

Example:

```
public class student{
  private string FirstName;
  private string LastName;
  private int Year;
  //Methods
public void SetYear(int Y)
{
  Year=Y;
}
public string Get lastN(){return LastName;}
}
```

Q: Define accessing of data members?

The dot(.) operator is used to access data members and methods of an object.

Q: What are object fields?

Within class declaration, any field declared without a static modifier is an instance field. Instance fields are associated with instance, so

every circle object create its own copy of field double r. Instance fields are also known as object fields.

Example:

//Instance(Object) Field

  public double r;

Q: Define instance methods?

  An instance method operates on specific object of class and any method not declared with 'static' keyword is automatically an instance method.

Example:

//Instance Method

  public double area ()

{

  return PI*r*r;

}

Q: What is Constructor?

Constructor is a block of code, similar to method that are called upon object creation and are used to initialize data in newly created objects. Constructors are optional.

Constructor is the method of class that is used to instantiate an object.

  ⇨ **Defining a Constructor:**
    ➢ Constructors have same name as the class name.

- ➢ Constructor are declared without return data type.
- ➢ Body of constructor initializes fields of object. (You can say that constructor is to construct objects)
- ➢ Multiple constructor declaration is possible.

Types of Constructor:

There are two types of constructors.

- ⇨ Default Constructor
- ⇨ Parameterized Constructor

Q: Define default constructor?

Default constructor takes no argument and mostly does nothing.

A default constructor is added to the class by compiler if no constructor is defined with in a program.

Q: Define parameterized constructor?

Parameterized constructor is a constructor with parameters that allows the user to assign values to the fields of objects.

Q: What do you know about lambda expression?

In java, major new features introduced was lambda expression.

Lambda expression is basically a function that does not have a name, treated as a value in programming language.

As java was does not allow code to run outside of class, this means lambda expression is an anonymous method that is defined in a class.

Syntax:

(paramlist)

{Statements} Runnable r = () -> System.out.println(r);

THE END

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CREATED BY:

Muhammad Bilal   (1163122)
Arslan Ahmad Shaad (1163135)