Experiment No: 03

Aim:- To write a program in Java with class Rectangle with the data fields width, length, area and colour. The length, width and area are of double type and colour is of string type. The methods are get_length(), get_width(), get_colour() and find_area().

Theory:

Class:

The process of binding data members and associated methods in a single unit is known as a Class.
A class is a collection of data members and associated methods.

Syntax to declare class

```
class <class_name>
{
Data member;
 method;
}
```

Class is a template or blueprint from which objects are created.

OBJECT

Definition of object: -

Instance of a class is known as an object (instance is nothing but creating sufficient memory space for the data members and methods of a class).
Every class variable is known as an object

Creating an object: -

Creating an object is nothing but allocating memory space for the data members and methods of a class by following Dynamic memory allocation by using new operator.
To create an object we have two approaches they are

Approach 1: -
Sytnax:

<cls name>objname = new <clsname()>;
Ex: -Student s = new Student();

Approach 2: -
Syntax:

<cls name>obj name; ----- >1
Obj name = new <cls name()> ; ---->2

Using a Class to Make Many Objects:

Class is like cookies cutters and cookies are objects. There is only one cookie cutter, but can be used to make many cookies. Cookies can be created and cookies can be destroyed A big cookie (such as a gingerbread house) might be built out of many smaller cookies of several different types. Different cookies may have different characteristics, even though they follow the same basic program.

Conclusion:

Program Code:

Take print of code along with output.

Questions-

1) **Define package in Java.**
2) **Differentiate between instance variable and local variable.**
3) **Does JVM provide any default values to the local variables?**
4) **What are the default values provided by the JVM to the instance variables?**

Experiment No: 04

Aim:- To write a program in JAVA to demonstrate the method and constructor Overloading.

Theory:

In Java, a constructor is a block of codes similar to the method. It is called when an instance of the class is created. At the time of calling constructor, memory for the object is allocated in the memory.
It is a special type of method which is used to initialize the object.
Every time an object is created using the new() keyword, at least one constructor is called.
A constructor may have or may not have parameters. Parameters are local variables to receive data.

Rules for creating Java constructor-

1) **Constructor name must be the same as its class name**
2) **A Constructor must have no explicit return type**
3) **A Java constructor cannot be abstract, static, final, and synchronized**

Types of constructors

There are two types of constructors:

•Default constructor (no-argument constructor)
•Parameterized constructor

Default Constructor-
A constructor that have no parameter is known as default constructor.
It calls a default constructor if there is no constructor available in the class.
Java compiler provides a default constructor by default. The default constructor is used to provide the default values to the object like 0, null, etc., depending on the type.

Syntax of default constructor:

```
<class_name>()
{

}
```

Parameterized Constructor-
A constructor which has a specific number of parameters is called a parameterized constructor. The parameterized constructor is used to provide different values to distinct objects. However, you can provide the same values also.

Constructor Overloading

Constructor overloading is a technique in Java in which a class can have any number of constructors that differ in parameter lists. The compiler differentiates these constructors bytaking into account the number of parameters in the list and their type

Now let us come up with the syntax for the constructor been invoked at the time of object or instance creation.

```
class Geek
{
  .....

  // A Constructor
  new G()
{

}

// We can create an object of the above class
// using the below statement. This statement
// calls above constructor.
G obj = new g();
```

Method Overloading

If a class has multiple methods having same name but different in parameters, it is known as Method Overloading. Method overloading *increases the readability of the program*.

There are two ways to overload the method in java

1. **By changing number of arguments**
2. **By changing the data type**

Conclusion-

Program Code:

Output:

Questions:-

1) **What is difference between method overloading and constructor overloading?**
2) **What are possible access modifiers that can be marked for a constructor?**
3) **What is the use of constructor in java?**