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PES

PES Institute of Technology, Bangalore

(Autonomous Institute under VTU, Belgaum)

CS 252

SEMESTER END EXAMINATION (SEE) B. E. 4TH SEMESTER – May. 2011

CS 252 – OBJECT ORIENTED PROGRAMMING WITH JAVA

Time: 3 Hrs | Answer All Questions | Max Marks: 100

1. a) What is the difference between equals() and = =? How is it different when used with Strings and user-defined class objects? **04**

b) Explain the significance of 'public', 'static' and 'String(args[])' in the following signature. 'public static void main (String args[])'. **03**

c) Are static methods inherited to derived class? Can static methods be overridden using @Override? Examine the following code snippets. What is the output if the file is named as B.java and the following commands are executed? Justify. **05**

javac B.java

java B

```
class A {
   public static void main(String args[])
   {
      B b = new B();
   }
}
public class B extends A {
   B(){
      System.out.println("In B");
   }
}
```

```
class A {
   public static void main(String args[])
   {
      B b = new B();
   }
}
public class B{
   B(){
      System.out.println("In B");
   }
}
```

d) Consider marks of 'n' students for a subject is stored an integer array. The values in the array lie in the range 0 to 100. Write an optimized program using 'switch' statement satisfying following conditions. Do not use 'if' in the program. The value of 'n' and marks are read from standard input, keyboard. Use extended for loop to print the array. **8**

If marks between 0 and 39 , print FAILED
If marks between 40 and 69, print AVERAGE
If marks between 70 and 89, print GOOD
If marks between 90 and 100, print EXCELLENT
Also print the count of how many failed, how many got AVERAGE, GOOD and EXCELLENT.

2. a) What is an interface? What is its use? Give an example **03**

b) What are Inner classes in java? Explain with example program. **06**

c) State four differences between a class and an interface. **04**

d) Write a program to evaluate an expression of the form "25 + 560" and print the result as follows: **07**
Operand 1 : 25 Operand 2 : 560 Operator : + Result : 585
The expression will have three parts. First part is an integer, second is an operator which can be '+', '-', '*', or '/' and third part is again an integer. The expression has to be read as string from standard input. If the operator is '/', the result has to be a double value. Use String class functions wherever appropriate. Do not convert to character array.

3. a) Can an exception be rethrown? Demonstrate with example program. **05**

b) Create an enumeration class called TrafficLight which has objects RED(25), YELLOW(5), GREEN(20). It has one private integer data member 'time' and methods setDuration() which takes an integer as input parameter which sets the 'time' variable and getDuration() which returns the time set. Write the main method in the enumeration class and print the initial time set during creation of object, set new time values, and print the new time values for all three objects using the methods. **05**

c) Implement the following design using classes, packages and interfaces. **10**

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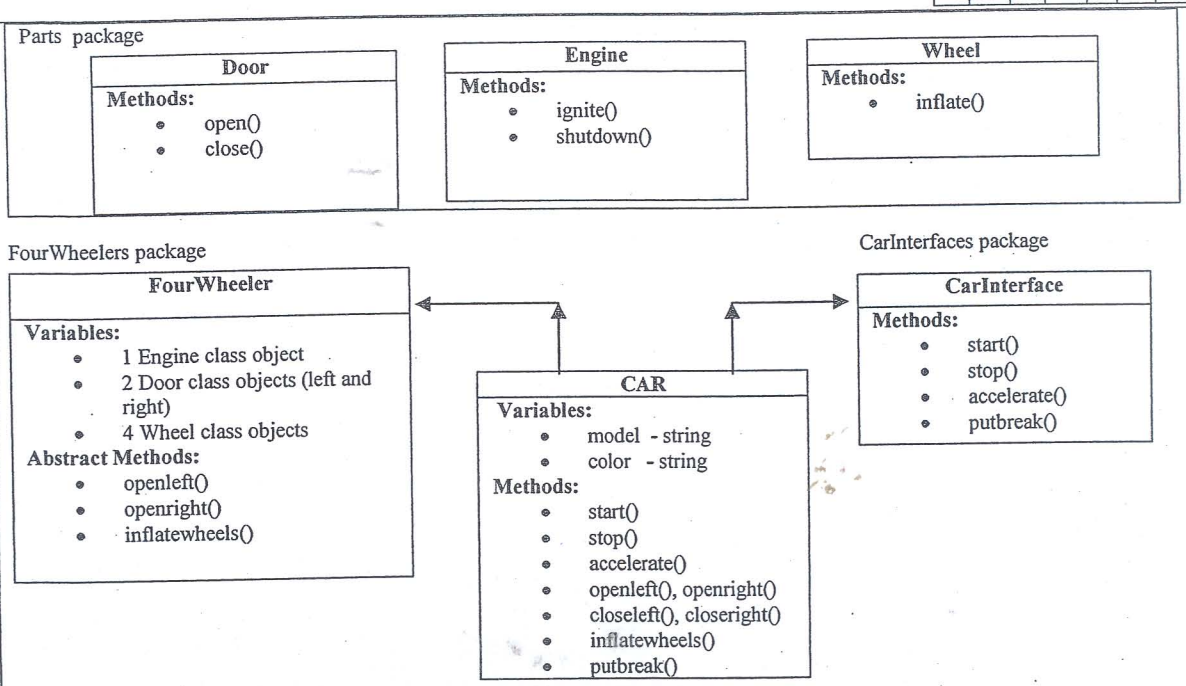

Package Parts has classes Engine, Wheel and Door in three different files.
Package FourWheelers has one class FourWheeler
Package CarInterfaces has one interface CarInterface
Car class has the main() method and this class has properties of FourWheeler class and CarInterface interface. It also has one constructor which is a two argument constructor to initialize variables model and color. Call to methods start() and stop() should call ignite() and shutdown() for engine object. Call to methods openleft(), openright(), closeleft(), closeright() should call corresponding functions for door objects. Call to method inflatewheels() should call inflate() for all wheel objects.
Assume all other methods has only one statement which prints what that function does.

4. a) What is the use of proxy class? What method is used to create an instance of proxy class? Explain the parameters in that method.

b) What are the two handlers that logging API provides? Write a line on each one?

c) Examine the following code. Explain what changes have to be made in this code if the following statement needs to be added in main():

```
Y y2 = y1.clone();
```

Rewrite the program with all required changes.

```
class X{
        int a=50;
        double b = 25;
      }
class Y{
        int yval = 100;
        X xobj = new X();
      }
class Test{
      public static void main(String args[]){
          Y y1 = new Y();
      }
}
```

d) What are two ways to create anonymous inner class? Give examples.

5. a) Can applets in the same web page communicate with each other? How?

b) Suppose a project folder contains the following java files and the corresponding class files related to the project. Write command to create an executable java archive file named MyProject.jar. Also write the command to execute the project using the jar file created.
ProjectInterface.java, ProjectImplementation.java, MainImpl.java
MainImpl.java has the main() method.

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c) Examine the following code snippets. Does it generate error? What is the output? Explain.

i)
```
class Test{
        static int cnt=0;
        int id;
        Test(){cnt++; id=cnt; }
      }
class MainTest{
        static Test  t1 = new Test();
        Test t2 = new Test();
        static Test  t3 = new Test();
        public static void main(String[] args){
            MainTest M = new MainTest();
            System.out.println("T1 : "+M.t1.id);
            System.out.println("T2 : "+M.t2.id);
            System.out.println("T3 : "+MainTest.t3.id);
        }
    }
```

ii)
```
class Test1{
        public static void main(String args[]){
            int i = -1;
            System.out.println(i >> 32);
            System.out.println(i >>>= 31);
        }
    }
```

iii)
```
class T {
    protected long value;
    public T(int x){}
}
class Test extends T{
    Test(){
        System.out.println("Constructor Test" + value);
    }
    public static void main (String args []){
        T t = new Test();
    }
}
```

iv)
```
class Test{
    public static void main (String args [])
    {
        int x = 5, y = 10, z = -6, a = 0, b = 0;
        System.out.println(b != 0 && 1/a > x+z);
    }
}
```

d) What is the use of method pointer? Does Java support method pointers? Explain.