Object Oriented Programming(OOP) Basics Workbook

Answer the Following

1. What is class?

2. What is local variable?

3. What is instance variable?

4. What is encapsulation?

5. What is object?

6. How to define a constant variable in Java?

7. What is the return type of the main() method? _____

8. Why is the main() method declared static? _____

9. What is the arguement of main() method? _____

State whether the following are True/False

1. A class consists of only local variables [ ]

2. A method declaration must always contain the access level. [ ]

3. Encapsulation means the same thing as information hiding. [ ]

4. If a Java source file is compiled successfully, the compilation produces one or more files with a java extension. [ ]

5. A main method should be compulsorily declared in all java classes. [ ]

6. The order of public and static declaration matters in main method. [ ]

Multiple Choice Questions

1. Which of these operators is used to allocate memory for an object?

   (a) malloc
   (b) alloc
   (c) new
   (d) give

2. Which of the following package stores all the simple data types in java?

   (a) lang
   (b) java
   (c) util
   (d) java.packages

3. Which of these statement is incorrect?

   (a) All object of a class are allotted memory for the all the variables defined in the class.
   (b) If a function is defined public it can be accessed by object of other class by inheritation.
   (c) main() method must be made public.
   (d) All object of a class are allotted memory for the methods defined in the class.

4. Which of the following is a valid declaration of an object of class Box?

   (a) Box obj = new Box();
   (b) Box obj = new Box;

(c) obj = new Box();

(d) new Box obj;

5. Which of these class is superclass of all other classes?

   (a) Math

   (b) Process

   (c) System

   (d) Object

6. Which of these method of Object class can generate duplicate copy of
   the object on which it is called?

   (a) clone()

   (b) copy()

   (c) duplicate()

   (d) dito()

Exercises

- Write the expected output, or compiler errors if any, for each of the
  following programs in the box provided below each program.

- Then execute the programs and check your answers.

- Then answer the questions given below.

Program 1

```java
public final static void main(String[] args) {
    double d = 10.0 / -0;
    if (d == Double.POSITIVE_INFINITY)
        System.out.println(''Positive infinity'');
    else
        System.out.println(''Negative infinity'');
}
```

Q1: What is the result of trying to compile and run the above code.

Program 2

```
1  void aMethod() {
2      float f = (1 / 4) * 10;
3      int i = Math.round(f);
4      System.out.println(i);
5  }
```

Q1: What is the result that will be printed out ?

Program 3

```
1      int i  = 0XCAFE;
2      boolean b = 0;
3      char c   = 'A';
4      byte b   = 128;
5      char c   = ''A'';
```

Q1: Which of the above declarations are valid?

Program 4

```
1  class Box {
2      int width;
3      int height;
4      int length;
5  }
6  class MainClass {
7      public static void main(String args[]) {
8          Box obj = new Box();
9          obj.width = 10;
10         obj.height = 2;
11         obj.length = 10;
12         int result = obj.width * obj.height * obj.length;
13         System.out.print(result);
14     }
15 }
```

Q1: What will be the output of the program?

Program 5

```
1  public class Test {
2      public void main(String[] args) {
3          System.out.println(''Hello'' + args[0]);
4      }
5  }
```

Q1: What will be the output of the program, if this code is executed with the command line by passing argument as world.

Program 6

```
1  public class Test {
2      public static void main(String[] args) {
3          int [] [] [] x = new int [3] [] [];
4          int i, j;
5          x[0] = new int [4][];
6          x[1] = new int [2][];
7          x[2] = new int [5][];
8          for (i = 0; i < x.length; i++) {
9              for (j = 0; j < x[i].length; j++) {
10                 x[i][j] = new int [i + j + 1];
11                 System.out.println(''size = '' + x[i][j].length);
12             }
13         }
14     }
15 }
```

Q1: In the given program, how many lines of output will be produced?

Program 7

```
1  public class Test {
2      public static void main(String[] args) {
3          Float f = new Float(32D);
```

```
4          System.out.println(f);
5        }
6  }
```

Q1: What is the result of attempting to compile and run above code?

Program 8

```
1  public class ObjComp {
2      public static void main(String [] args) {
3          int result = 0;
4          ObjComp oc = new ObjComp();
5          Object o = oc;
6          if (o == oc)
7              result = 1;
8          if (o != oc)
9              result = result + 10;
10         if (o.equals(oc))
11             result = result + 100;
12         if (oc.equals(o))
13             result = result + 1000;
14         System.out.println(''result = '' + result);
15     }
16  }
```

Q1: What will be the output of the program?