Getting Started with Java Workbook

Answer the Following

1. What is the most importanat feature of Java? _____

2. What is the base class for all classes? _____

3. Which package is imported by default? _____

4. Why is the main method declared static? _____

5. Why is String class considered immutable?

6. What do you mean by Object?

7. Expain JVM?

8. Define class.

9. What is the difference between StringBuffer and StringBuilder class?

10. What is jagged array?

State whether the following are True/False

1. JVM is platform independent. [ ]

2. Java Supports pointers. [ ]

3. Arrays are primitive data types. [ ]

4. A source file can contain more than one class declaration. [ ]

5. Is empty .java file name a valid source file name? [ ]

6. If I don't provide any arguments on the command line, then the String array of Main method will be empty. [ ]

Multiple Choice Questions

1. What is the range of data type short in Java?

   (a) -128 to 127
   (b) -32768 to 32767
   (c) -2147483648 to 2147483647
   (d) None

2. Which of these is an incorrect array declaration?

   (a) int arr[] = new int[5]
   (b) int [] arr = new int[5]
   (c) int arr[] arr = new int[5]
   (d) int arr[] = int [5] new

3. Which of the following loops will execute the body of loop even when condition controlling the loop is initially false?

   (a) do-while
   (b) while
   (c) for
   (d) None

4. Which of the following statements are incorrect?

   (a) String is a class.

(b) Strings in java are mutable.

(c) Every string is an object of class String.

(d) Java defines a peer class of String, called StringBuffer, which allows string to be altered.

5. Which of these keywords is used to make a class?

(a) class

(b) struct

(c) int

(d) None

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

```
1  int i = 10;
2  int n = i++ % 5;
```

Q1: What are the values of i and n after the code is executed?

Q2: What are the final values of i and n if instead of using the postfix increment operator (i++), you use the prefix version (++i))?

Program 2

```
1  public class NumberHolder {
2      public int anInt;
3      public float aFloat;
4  }
```

Q1: Write some code that creates an instance of the class 'Number-Holder'?

Q2: Write some code that initializes its two member variables, and then displays the value of each member variable?

Program 3

```
1  public class IdentifyMyParts {
2      public static int x = 7;
3      public int y = 3;
4  }
```

Q1: How many class variables does the `IdentifyMyParts` class contain? What are their names?

Q2: How many instance variables does the `IdentifyMyParts` class contain? What are their names?

Q3: What is the output from the following code:

```
IdentifyMyParts a = new IdentifyMyParts();
IdentifyMyParts b = new IdentifyMyParts();
a.y = 5;
b.y = 6;
a.x = 1;
b.x = 2;
System.out.println("a.y = " + a.y);
System.out.println("b.y = " + b.y);
System.out.println("a.x = " + a.x);
System.out.println("b.x = " + b.x);
```

Program 4

```
1  public class EqualsTest {
2      public static void main(String[] args) {
3          // code goes here
4      }
5  }
```

4

Q1: What if the `static` modifier is removed from the signature of the main method?

Q2: What if I do not provide the String array as the argument to the method?

Q3: What happend if line 2 changed as `static public void main(String args[]) {`

Program 5

```
1  int key = 1;
2  switch (key + 1) {
3      case 1:
4          System.out.println("Cake");
5          break;
6      case 2:
7          System.out.println("Pie");
8          break;
9      case 3:
10         System.out.println("Ice cream");
11     case 4:
12         System.out.println("Cookies");
13         break;
14     default:
15         System.out.println("Diet time");
16 }
```

Q1: What would be the output of the above code?

Q2: What would be the output if the value of key is 3?

Q3: What would be the output if the value of key is 5?

Program 6

```
1  for (int n = 1; n <= 5; n++) {
2      if (n == 3)
3          break;
4      System.out.println(``Hello'');
5  }
6  System.out.println(``After the loop'');
```

Q1: What would be the output of the above code?

Q2: What would be the output if line 3 is changed to `System.exit(0);`?

Program 7

```
1  String[] skiResorts = {''Whistler Blackcomb'', ''
       Squaw Valley'', ''Brighton'', ''Snowmass'', ''
       Sun Valley'', ''Taos'' };
```

Q1: What is the index of `Brighton` in the following array?

Q2: What is the value of the expression `skiResorts.length`?

Q3: What is the index of the last item in the array?

Q4: What is the value of the expression `skiResorts[4]`?

Program 8

```
1  String hannah = ''Did Hannah see bees? Hannah did.
       '';
```

Q1: What is the value displayed by the expression `hannah.length()`?

Q2: What is the value returned by the method call `hannah.charAt(12)`?

Q3: What is the value returned by the method call `hannah.substring(9, 12)`?

Program 9

```java
1  public class BasicsDemo {
2      public static void main(String[] args) {
3          int sum = 0;
4          for (int current = 1; current <= 10;
               current++) {
5              sum += current;
6          }
7          System.out.println(''Sum = '' + sum);
8      }
9  }
```

Q1: What is the name of each variable declared in the program? Remember that method parameters are also variables.

Q2: What is the data type of each variable?

Q3: What is the scope of each variable?

Program 10

```java
1  public class CheckSign {
2      public static void main(String args[]) {
3          int number = 7;
4          boolean isPositive = (number > 0);
5          if (number > 0);
6              number = -100;
7          if (isPositive)
8              System.out.println("Positive.");
9          else
10             System.out.println("Not positive.");
11         System.out.println(number);
12     }
13 }
```

Q1: What will be the output of the above code?

Q2: What will be the output if line 4 is changed to `boolean isPositive = false;`?

Q3: What will happen if line 3 is changed to `int number;`?