

WEEK 4 :CLASSES AND OBJECTS

Examine the following program fragment:

```
int[] array = { 1, 4, 3, 6 };  
int what = 0;  
  
// scan the array  
for ( int index=0; index < array.length; index++ )  
{  
    what = what + array[ index ] ;  
}  
System.out.println( what );
```

What does the fragment write to the monitor?

- ☐ a. 6
- ☐ b. 1
- ☐ c. 1 4 3 6
- ☒ d. 14
- ☐ e.

The following code declares a character array with 3 rows and 5 columns:

- ☐ a. `int matrix = new char[3][5];`
- ☐ b. `matrix = new char[3, 5];`
- ☐ c. `char [] [] matrix = [3,5]`
- ☒ d. `char [] [] matrix;`
`matrix = new char[3][5];`

Here is a method definition:

```
int compute( int a, double y ){ ... }
```

Which of the following has a different signature?

- ☐ a. `int compute(int a, int y){ ... }`
- ☐ b. `double compute(int sum, double y){ ... }`
- ☒ c. `int compute(int sum, double value){ ... }`
- ☐ d. `double compute(int a, double y){ ... }`

What is a method's signature?

- ☐ a. The signature of a method is the name of the method and the data types of its parameters.
- ☐ b. The signature of a method is the name of the method, its parameter list, and its return type.
- ☐ c. The signature of a method is the name of the method and the type of its return value.
- ☒ d. The signature of a method is the name of the method and the names of its parameters

Given the following,

```
1. long test( int x, float y ) {  
2.  
3. }
```

Which one of the following line inserted at line 2 would not compile?

- ☐ a. `return (long) y;`
- ☐ b. `return (int) 3.14d;`
- ☒ c. `return x / 7;`
- ☐ d. `return (y / x);`

Which one of the following is generally a valid definition of an application's `main()` method ?

- ☐ a. `public static void main(Graphics g);`
- ☐ b. `public static void main(String args);`
- ☐ c. `public static void main();`
- ☒ d. `public static void main(String [] args);`

Which of the following is the general scheme for a class definition:

- ☐ a. `class ClassName`
- ```
{
 public static void main (String[] args)
 {
 // entire program goes here
 }
}
```
- ☐ b. `ClassName`
- ```
{  
    // Description of the instance variables.  
  
    // Description of the constructors.  
  
    // Description of the methods.  
}
```

☒ c. `class ClassName`

```
{  
    // Description of the instance variables.  
  
    // Description of the constructors.  
  
    // Description of the methods.  
}
```

☐ d. `Class ClassName`

```
{  
    // Description of the instance variables.  
  
    // Description of the constructors.  
  
    // Description of the methods.  
}
```

Here is the general syntax for method definition:

```
accessModifier returnType methodName( parameterList )
```

```
{  
    Java statements  
  
    return returnValue;  
}
```

What is true for the `returnType` and the `returnValue`?

- ☐ a. If the `returnType` is `void` then the `returnValue` can be any type.
- ☒ b. The `returnValue` must be the same type as the `returnType`, or be of a type that can be converted to `returnType` without loss of information.
- ☐ c. The `returnValue` must be exactly the same type as the `returnType`.
- ☐ d. The `returnValue` can be any type, but will be automatically converted to `returnType` when the method returns to the caller.

What term is used for hiding the details of an object from the other parts of a program?

- ☐ a. Compilation
- ☒ b. Encapsulation
- ☐ c. Obfuscation
- ☐ d. Data Mining

What attributes do all real world objects have?

- ☐ a. Objects have state and behavior.
- ☒ b. Objects have identity, state, and behavior.
- ☐ c. Objects have size and weight.
- ☐ d. Objects have existence.

What attributes do all Software objects have?

- ☐ a. Software objects have RAM, ROM, and processors.
- ☒ b. Software objects have identity, state, and behavior.
- ☐ c. Software objects are made of computer components.
- ☐ d. Software objects have variables and storage.

When you run a Java application by typing `java someClass` what is the first method that starts?

- ☐ a. The `run()` method `someClass`.
- ☐ b. The `applet` method.
- ☐ c. The `someClass` method.
- ☒ d. The `main()` method of `someClass`.

What is a class?

- ☒ a. A class is a description of a kind of object.
- ☐ b. A class is a section of the hard disk reserved for object oriented programs.
- ☐ c. A class is a section of computer memory containing objects.
- ☐ d. A class is the part of an object that contains the variables.

What is another name for creating an object?

- ☐ a. inheritance
- ☒ b. initialization
- ☐ c. instantiation
- ☐ d. insubordination

How many objects of a given class may be constructed in an application?

- ☒ a. As many as the application asks for.
- ☐ b. Only one per constructor.
- ☐ c. One object per variable.
- ☐ d. Only one per class.

Which of the following invokes the method `length()` of the object `str` and stores the result in `val`?

- ☐ a. `val = length(str);`
- ☐ b. `val = length.str()`
- ☐ c. `val = length().str`
- ☒ d. `val = str.length()`

What is an actual parameter?

- ☐ a. The value that is passed into a method by a caller.
- ☐ b. The value that is returned by a method.
- ☒ c. The identifier used in a method to stand for the value that is passed into a method by a caller.
- ☐ d. A variable used to control a counting loop.

Each object of the class contains its own copy of instance variables.

- ☒ a. True
- ☐ b. False

Can you say that behaviour of an object is similar to method of the class?

- ☒ a. False
- ☐ b. True

```
public class Test1 {  
    int i = 10;  
    public static void main(String[] args) {  
        int i = 50;  
        System.out.println(i);  
        Test1 obj = new Test1();  
        obj.printNumber(obj.i);  
    }  
    public void printNumber(int i) {  
        System.out.println(i);  
    }  
}
```

What will be the output?

- ☐ a. Compilation error because of duplicate variable
- ☒ b. 50
10
- ☐ c. Compilation error because static method is accessing nonstatic data member
- ☐ d. 50
50


```
class test {  
    int x = 20;  
  
    void display(int x) {  
        System.out.println(x);  
        System.out.println(this.x);  
    }  
  
    public static void main(String[] args) {  
        Test t = new Test();  
        t.display(30);  
    }  
}
```

What is the output of the above program?

- ☐ a. 30
30
- ☐ b. 20
30
- ☒ c. 30

- ☐ d. 20
20

What is the widest valid returnType for method A in line 3?

```
public class ReturnIt {  
    returnType methodA(byte x, double y) /* Line 3 */  
    {  
        return (long) x / y * z;  
    }  
}
```

- ☒ a. long
☐ b. double
☐ c. int
☐ d. float

What are not the characteristics of object?

- ☐ a. variables
- ☐ b. behaviours
- ☒ c. state
- ☐ d. identity

What is the output of the following program?

```
public class Employee {  
    public String firstName;  
    public String lastName;  
    public int age;  
    public char gender;  
  
    public Employee(String firstNameForThisObject, String lastNameForThisObject, char gender) {  
        firstName = firstNameForThisObject;  
        lastName = lastNameForThisObject;  
        gender = gender;  
    }  
}
```

```
public static void main(String[] args) {  
    Employee employee = new Employee("firstNameForThisObject", "lastNameForThisObject", 'M');  
    System.out.println("first name is:" + employee.firstName);  
    System.out.println("last name is:" + employee.lastName);  
    System.out.println("age is:" + employee.age);  
    System.out.println("gender is:" + employee.gender);  
}  
}
```

- ☐ a. first name is:firstNameForThisObject
last name is:lastNameForThisObject
age is:0
gender is:M
- ☐ b. Compilation error
- ☒ c. first name is:firstNameForThisObject
last name is:lastNameForThisObject
age is:0
gender is:
- ☐ d. Runtime error

You read the following statement in a Java program that compiles and executes.

```
submarine.dive(depth);
```

- ☐ a. dive must be the name of an instance field
- ☐ b. submarine must be the name of a interface
- ☒ c. dive must be a method.
- ☐ d. depth must be an int
- ☐ e. submarine must be a method

Which of the following statement is TRUE with respect to class and members of a class?

- ☒ a. It is mandatory to use an access specifier along with declaration statement of a member variable
- ☐ b. It is mandatory for every class to declare a main() method inside it.
- ☐ c. It is mandatory to specify return type along with the method definition in a class.
- ☐ d. It is mandatory to initialize member variables while declaring them in a class.

There can be more than one java class in same file if.

- ☐ a. All classes are having protected access modifier
- ☐ b. All the classes are having private access modifier
- ☒ c. Only 1 class has public access modifier and has the same name as the .java file
- ☐ d. All classes are having public access modifier

How many references can there be to a single object?

- ☐ a. Two: one in a caller and one in the called method.
- ☐ b. Three: the original reference, and one reference each for a formal and an actual parameter.
- ☐ c. Only one.
- ☒ d. There can be any number of references, held in any number of variables and parameters (as long as they are of the correct type.)

What is the stored in the object obj in following lines of code?

```
box obj;
```

- ☐ a. NULL
- ☐ b. Any arbitrary pointer
- ☒ c. Garbage

Which of these keywords is used to make a class?

- ☐ a. None of the mentioned
- ☒ b. class
- ☐ c. int
- ☐ d. struct

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

- ☒ a. `Box obj = new Box();`
- ☐ b.
- ☐ c. `new Box obj;`
- ☐ d. `Box obj = new Box;`
- ☐ e. `obj = new Box();`

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

- ☐ a. malloc
- ☐ b. give
- ☐ c. alloc
- ☒ d. new

Which of these statement is incorrect?

- ☐ a. `main()` method must be made public
- ☐ b. Applets do not require a `main()` method at all
- ☐ c. There can be only one `main()` method in a program
- ☒ d. Every class must contain a `main()` method

What is the output of this program?

```
class main_class
{
    public static void main(String args[])
    {
        int x = 9;
        if (x == 9)
        {
            int x = 8;
            System.out.println(x);
        }
    }
}
```

☐ a. Runtime Error

☐ b. 9

☒ d. Compilation Error

What is the output of this program?

```
class box
{
    int width;
    int height;
    int length;
}
class mainclass
{
    public static void main(String args[])
    {
        box obj = new box();
        obj.width = 10;
        obj.height = 2;
        obj.length = 10;
        int y = obj.width * obj.height * obj.length;
        System.out.print👉 ;
    }
}
```


- ☐ a. 12
- ☒ b. 200
- ☐ c. 400
- ☐ d. 100

What is the output of this program?

```
class box
{
    int width;
    int height;
    int length;
}
class mainclass
{
    public static void main(String args[])
    {
        box obj1 = new box();
        box obj2 = new box();
    }
}
```

```
        obj2 = obj1;
        System.out.println(obj2.height);
    }
}
```

- ☐ a. Runtime error
- ☐ b. 2
- ☐ c. Garbage Value
- ☒ d. 1

What is the output of this program?

```
class box
{
    int width;
    int height;
    int length;
}
class mainclass
{
    public static void main(String args[])
    {
        box obj = new box();
        System.out.println(obj);
    }
}
```

- ☐ a. 1
- ☒ b. classname@hashcode in hexadecimal form
- ☐ c. 0
- ☐ d. Runtime error

