

Multiple Choice Questions (20 points)

Answer all of the following questions. READ EACH QUESTION CAREFULLY. Fill the correct bubble on your scantron sheet. Each correct answer is worth 1 point. Each question has EXACTLY one correct answer.

1. Mae's accounting service helps each customer figure their tax owed. The customer's first name, middle initial and last name go on the form. The number of dependents is needed, along with the total income for the year. Mae charges a fee of 1.5% of total income for the service.

Which one of the following would be the best suitable type for a variable that stores the number of dependents of the customer?

- A. **double**
- B. **int**
- C. **char**
- D. **String**
- E. None of the above

2. Still referring to question 1, which one of the following would be a suitable type for a variable, that stores the last name of the customer?

- A. **double**
- B. **int**
- C. **char**
- D. **String**
- E. None of the above

3. Still referring to the situation described in question 1, suppose the program which Mae uses has a method which, given the total income and the number of dependents (and no other information) computes and returns the tax owed.
Such a method (choose the best answer)
- A. would have more than two parameters and a void return type.
 - B.** would have two parameters and a double return type.
 - C. would have less than two parameters and an int return type.
 - D. would have a void return type.
 - E. None of the above
4. Still referring to the problem described in question 1, what would be the best way to represent the 1.5% fee as a constant in the program?
- A. `public double fee=0.015;`
 - B. `private double fee=0.015;`
 - C. `public final String FEE="0.015";`
 - D.** `public final double FEE=0.015;`
 - E. `public final long FEE=0.015;`
5. Which of the following is TRUE about the switch statement in Java?
- A. A default sends execution immediately to the end of the switch statement.
 - B.** A break sends execution immediately to the end of the switch statement.
 - C. A case sends execution immediately to the end of the switch statement.
 - D. A break sends execution immediately to the end of the next case.
 - E. The statements in a switch continue to execute as long as the condition at the top of the switch remains true.

6. Among these expressions, which is(are) of type String?

- A. "0"
- B. "ab"+"cd"
- C. '0'
- D. A and B**
- E. A, B and C

7. The interface of a class refers to

- A. the list of all of the fields and methods of the class
- B. the list of all of the public fields and public methods of the class**
- C. the list of all the private fields and public methods of the class
- D. the list of all the private fields and private methods of the class
- E. the comments written in the code of the class.

8. Consider the following code fragment

```
Rectangle r1 = new Rectangle();  
r1.setColor(Color.blue);  
Rectangle r2 = r1;  
r2.setColor(Color.red);
```

After the above piece of code is executed, what are the colors of r1 and r2 (in this order)?

- A. Color.blue
Color.red
- B. Color.blue
Color.blue
- C. Color.red
Color.red**
- D. Color.red
Color.blue
- E. Can't tell. There is not enough information.

9. What is the type and value of the following expression? (notice the integer division)

`-4 + 1/2 + 2*-3 + 5.0`

- A. `int`
`-5`
- B. `double`
`-4.5`
- C. `int`
`-4`
- D. `double`**
`-5.0`
- E. None of the above

10. What is printed by the following statement?

`System.out.print("Hello, \nworld!");`

- A. `Hello, \nworld!`
- B. `Hello, world!`
- C. `Hello,`**
`world!`
- D. `"Hello, \nworld!"`
- E. None of the above.

11. In the class `Car`, you want to create an instance method `isSpeeding` to check whether an object of type `Car` is speeding or not. One of the instance fields of the `Car` class is a double variable `speed` equal to the current speed of the `Car` object. The class also lists a constant static double field `SPEED_LIMIT`, equal to the legal speed limit for the driving conditions of the `Car` object.

What method signature would be best for `isSpeeding`?

- A. `public void isSpeeding(double speed)`
- B. `public boolean isSpeeding()`**
- C. `public boolean isSpeeding(double speed, double SPEED_LIMIT)`
- D. `public isSpeeding()`
- E. `public boolean isSpeeding(speed, SPEED_LIMIT)`

12. Consider the two methods (within the same class)

```
public int foo(int a, String s)
{
    s = "Yellow";
    a=a+2;
    return a;
}

public void bar()
{
    int a=3;
    String s = "Blue";
    a = foo(a,s);
    System.out.println("a="+a+" s="+s);
}
```

What is printed?

- A. a=3 s=Blue
 - B. a=5 s=Yellow
 - C. a=3 s=Yellow
 - D. a=5 s=Blue**
 - E. The code doesn't compile. In Java, it is forbidden to use the same name for a local variable in two different methods.
13. Using the Java class `uwscse.graphics.Oval`, which statement would you write to create a circle of radius 20, centered at `x=100` and `y=100`.
- A. `new Oval(80,80,40,40);`**
 - B. `new Oval(80,80,20,20);`
 - C. `new Oval(60,60,40,40);`
 - D. `new Oval(120,120,20,20);`
 - E. `new Oval(100,100,20,20);`

14. Which of the following variable declaration would NOT compile in a Java program?

- A. `int var;`
- B. `int VAR;`
- C. `int var1;`
- D. `int var_1;`
- E. `int 1_var;`**

15. Using De Morgan's law, how would you rewrite the following conditional statement

(i.e. is rewrite the statement using `&&` instead of `|`)

`(c != 'n' && z+2 <= 5)`

- A. `!(c != 'n' || z+2 <= 5)`
- B. `!(c == 'n' || z+2 >= 5)`
- C. `!(c != 'n' || z+2 <= 5)`
- D. `!(c == 'n' || z+2 > 5)`**
- E. `!(c == 'n' || z+2 < 5)`

16. In a Java program, you read the following statement that compiles and executes.

```
Cookie cookie = new Cookie("chocolate chips");
```

What can you conclude?

- A. Cookie is the name of a class.
- B. cookie is a primitive type variable.
- C. The Cookie class must have a constructor that has one formal parameter of type String.
- D. A and C**
- E. A, B and C

17. You are programming a game of dice. You need to generate a random integer that can be 1, 2, 3, 4, 5, or 6.
Which of the following expression would you select?

Recall that `Math.random()` returns a random double ≥ 0 and < 1

- A. `Math.random()*6`
- B. `((int)Math.random())*6+1`
- C. `(int)(Math.random()*6)+1`
- D. `(int)(Math.random()+6)`
- E. `(int)(Math.random()*6)`

18. Consider the following class definition:

```
public class MyClass{
    private int value;
    public void setValue(int i){ /* code */ }
    // Other methods...
}
```

The method `setValue` assigns the value of `i` to the instance field `value`. What could you write for the implementation of `setValue`?

- A. `value = i;`
- B. `this.value = i;`
- C. `value == i;`
- D. A and B
- E. A, B and C.

19. What will the following program fragment output?

```
Integer i = new Integer(5);
Integer j = new Integer(5);
if (i==j)
    System.out.println("Equal");
else
    System.out.println("Not equal");
```

- A. Equal
- B. Not equal**
- C. Equal
Not equal
- D. The program doesn't compile because == can't be used with references.
- E. The program doesn't execute because i and j are not correctly initialized.

20. Consider the following truth table for a logical operator "implies"

P	Q	P implies Q
T	T	T
T	F	F
F	T	T
F	F	T

Which of the following java conditional expressions would reproduce the above truth table?

- A. P || Q
- B. (!P) && (!Q)
- C. (!P) || Q**
- D. P && (!Q)
- E. (!P) && Q