

Part A. Multiple choices

1. Which of the following prints out floating-point numeric?
 - a. `int x = 10;`
`int b = 22;`
`System.out.println(x / b);`
 - b. `int x = 10;`
`int b = 22;`
`System.out.println(b / x);`
 - c. `float x = 10;`
`int b = 20;`
`System.out.println((int) x / b);`
 - d. `float x = 10;`
`int b = 20;`
`System.out.println(b / (int) x);`
 - e. `float x = (int) 10.00;`
`float b = (int) 22.00;`
`System.out.println(b / x);`
2. Given `Scanner sc = new Scanner(System.in)`, which is the correct way to input an integer?
 - a. `int a = sc.nextFloat();`
 - b. `int a = (int) sc.nextFloat();`
 - c. `int a = (int) sc.next();`
 - d. `int a = (int) sc.nextLine();`
 - e. None of the above
3. Given `String s = "Java Programming"`, choose all that print **JAVAing**
 - a. `System.out.println(s.substring(0, 4));`
 - b. `System.out.println(s.substring(0, 4).toUpperCase().concat(s.substring(13)));`
 - c. `System.out.println(s.substring(0, 4).concat(s.substring(13).toUpperCase()));`
 - d. `System.out.println(s.substring(0, 4).toUpperCase() + s.substring(13).toLowerCase());`
 - e. `System.out.println("JAVAing");`
4. Which is variable assignment?
 - a. `int a = 10;`
 - b. `int a = "Hello, world";`
 - c. `float a;`
 - d. `a = "Good afternoon";`
 - e. None of the above

5. In the program for calculating area of triangle below, what type of error will be found (if any)?

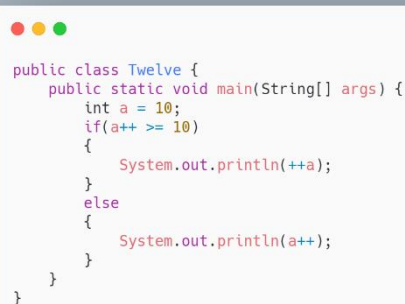


```
import java.util.Scanner;

public class TriangleArea {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        double base = sc.nextDouble();
        double height = sc.nextDouble();
        double area = "0.6" * base * height;
        System.out.println(area);
    }
}
```

- a. Compile-time error
 - b. Run-time error
 - c. Logical error
 - d. No error
6. Does Java use compiler or interpreter?
- a. Java uses compiler to compile source code into executable file.
 - b. Java uses interpreter to interpret each line of source code.
 - c. Java uses compiler to compile source code into bytecode, then uses interpreter to interpret the bytecode.
 - d. Java uses interpreter to interpret source code into bytecode, then uses compiler to compile the bytecode into executable file.
 - e. None of the above
7. Which of the following is an invalid variable name?
- a. `_hello_world_`
 - b. `$$$M0n3Y$$$can_not$$$buy$$$you$$$_HAPPINESS$$$`
 - c. `rosesareredvioletsarebluelovenevercrossedmyminduntilthedayimetyou`
 - d. `1plus1_equals_1`
 - e. All of the above

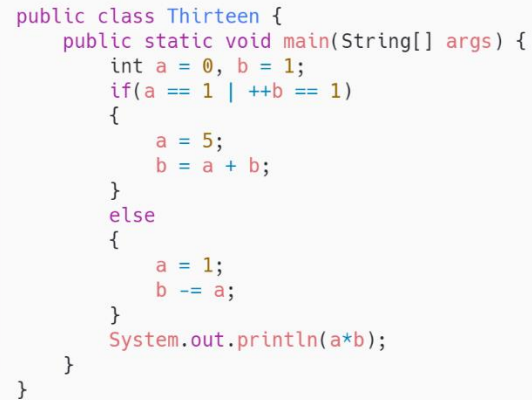
8. Which of the following equals 6?
- a. $2 + 4 \% 3 + 1 - 2$
 - b. $6 * 6 \% 6 + 6 / 6 - 6 / 6$
 - c. $1 + 2 - 3 + 4 - 5 + 6 + 7 \% 6 \% 9$
 - d. $9 + 9 * 2 - 1 \% 6 \% 7$
 - e. $4 - 5 * 9 \% 6 - 7 + 25 \% 8$
9. Given `int a = 2, b = 1`, choose all of the following that equal 9
- a. `a++ * (b+1) + b++`
 - b. `++a + ++a + ++b + b++`
 - c. `b++ + a++ + b++ + ++a`
 - d. `a-- - --a + b++ + ++b - (a-- - 3)`
 - e. `((b++)*b++)*b++ + b++ - --a`
10. If we want to store 11-digit student ID, which data type should we use?
- a. `int`
 - b. `float`
 - c. `double`
 - d. `string`
 - e. `long`
11. If we want to change the string `Hakuna Matata` into `Hikuni Mititi`, which string method should we use?
- a. `substring`
 - b. `concat`
 - c. `indexOf`
 - d. `charAt`
 - e. `replace`
12. What will be the result of the following program?



```
public class Twelve {  
    public static void main(String[] args) {  
        int a = 10;  
        if(a++ >= 10)  
        {  
            System.out.println(++a);  
        }  
        else  
        {  
            System.out.println(a++);  
        }  
    }  
}
```

- a. 8
- b. 9
- c. 10
- d. 11
- e. 12

13. What is the result of the following program?



```
public class Thirteen {  
    public static void main(String[] args) {  
        int a = 0, b = 1;  
        if(a == 1 || ++b == 1)  
        {  
            a = 5;  
            b = a + b;  
        }  
        else  
        {  
            a = 1;  
            b -= a;  
        }  
        System.out.println(a*b);  
    }  
}
```

- a. -1
 - b. 0
 - c. 1
 - d. 2
 - e. 3
14. What is the result of statement `a = (b>10) ? 100 : 1;` , when `b = 20`?
- a. 1
 - b. 11
 - c. 100
 - d. 101
 - e. 1001
15. Given `String a = "Apple"`, `b = "Cat"` , what is the result of statement `a.compareTo(b)`?
- a. -2
 - b. -1
 - c. 0
 - d. 1
 - e. 2
16. Given `String a = "Cat"`, `b = "Catfish"` , what is the result of statement `a.compareTo(b)`?
- a. -1
 - b. -2
 - c. -3
 - d. -4

17. In the program below, which input would give the output **You won second prize!**?

```
import java.util.Scanner;

public class Seventeen {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();
        int d = sc.nextInt();
        if(a + b * c - d == 24)
        {
            System.out.println("You won the
lottery!");
        }
        else if(a + b * c - d == 10)
        {
            System.out.println("You won second
prize!");
        }
        else
        {
            System.out.println("Sorry, you have bad
luck.");
        }
    }
}
```

- a. 1 2 3 4
- b. 5 5 2 5
- c. 6 5 4 2
- d. 2 2 3 1
- e. -1 -2 -5 3

18. Suppose you write the code to display "Cannot get a driver's license" if age is less than 18 and

"Can get a driver's license" if age is greater than or equal to 18. Which of the following code is the best?

- a.

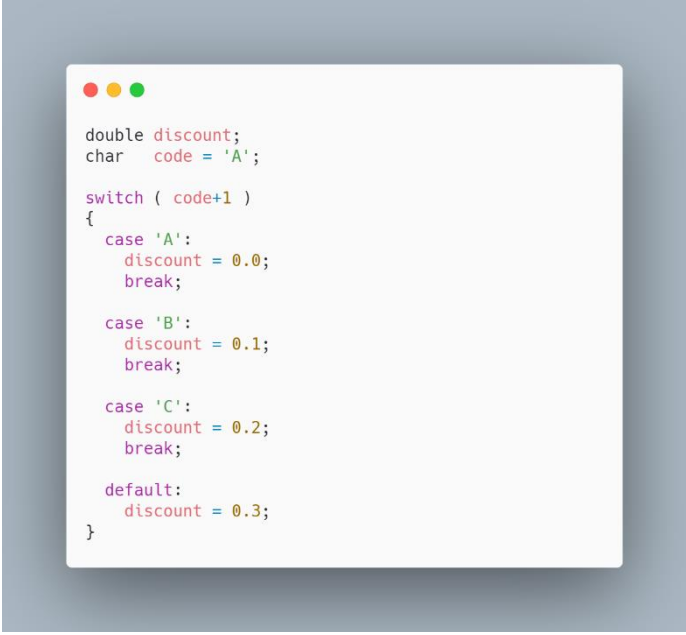
```
if (age < 18)
    System.out.println("Cannot get a driver's license");
if (age >= 18)
    System.out.println("Can get a driver's license");
```
- b.

```
if (age < 18)
    System.out.println("Cannot get a driver's license");
else
    System.out.println("Can get a driver's license");
```
- c.

```
if (age < 18)
    System.out.println("Cannot get a driver's license");
else if (age >= 18)
    System.out.println("Can get a driver's license");
```


- d. `if (age < 18)`
 `System.out.println("Cannot get a driver's license");`
`else if (age > 18)`
 `System.out.println("Can get a driver's license");`
`else if (age == 18)`
 `System.out.println("Can get a driver's license");`

19. What value will be assigned to `discount`?



```
double discount;  
char code = 'A';  
  
switch ( code+1 )  
{  
    case 'A':  
        discount = 0.0;  
        break;  
  
    case 'B':  
        discount = 0.1;  
        break;  
  
    case 'C':  
        discount = 0.2;  
        break;  
  
    default:  
        discount = 0.3;  
}
```

- a. `-0.1`
b. `0.0`
c. `0.1`
d. `0.2`
e. `0.3`
20. What is the result?



```
int x = 0;  
int i = 1;  
  
switch (i)  
{  
    case 1:  
        x += i++;  
    case 2:  
        x += i++ * 2;  
    case 3:  
        x += i++ * 3;  
    default:  
        x += i;  
}
```

- a. 1 b. 2 c. 3 d. 6 e. 18

Part B. (Algorithm)

Write the output of each program.

1. Input x = 6



```
import java.util.Scanner;

public class OneB {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int x = sc.nextInt();
        for(int i=0; i<x; i++)
        {
            System.out.println("*");
        }
    }
}
```

2. Input x=5



```
import java.util.Scanner;

public class TwoB {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int x = sc.nextInt();
        for(int i=0; i<x; i++)
        {
            for(int j=0; j < x*2 + 1; j++)
            {
                System.out.print("o");
            }
            System.out.print("\n");
        }
    }
}
```

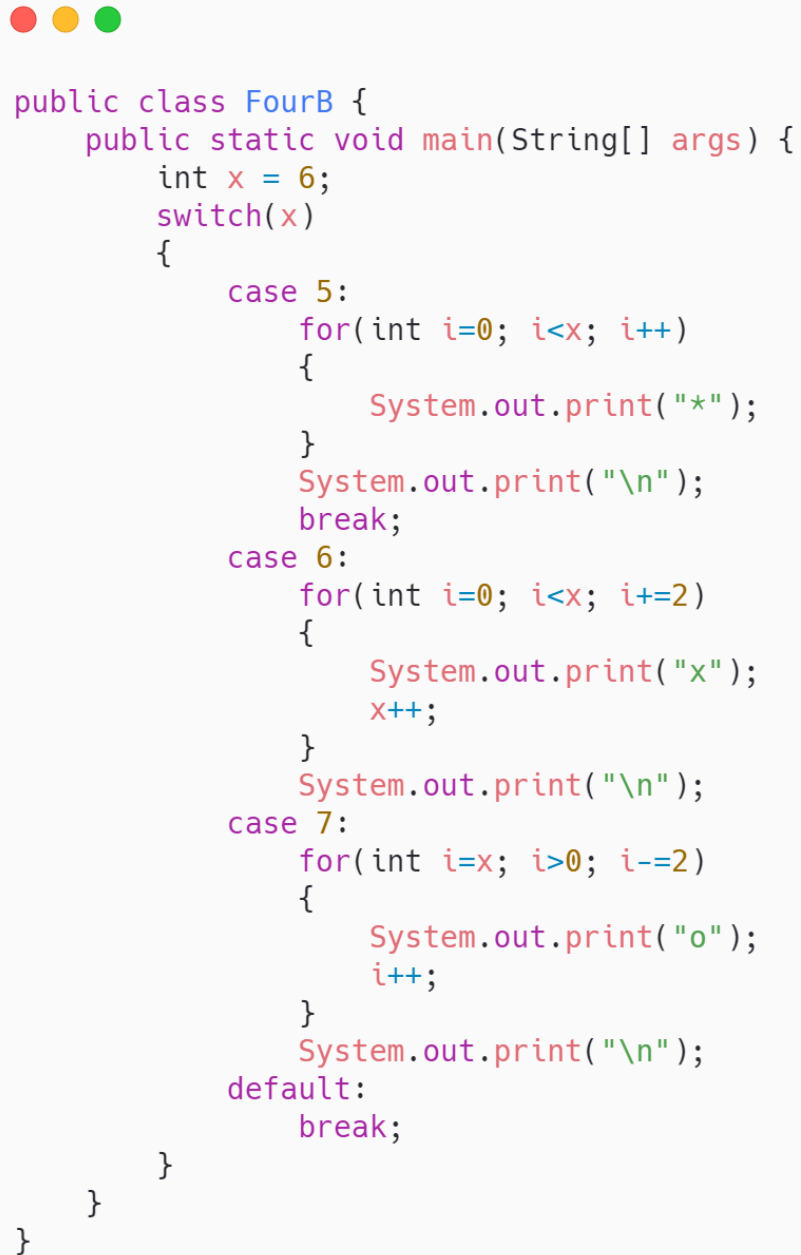

3. Input x = 4



```
import java.util.Scanner;

public class ThreeB {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int x = sc.nextInt();
        for(int i=0; i<x; i++)
        {
            for(int j=0; j < x*2 + 1; j++)
            {
                if((i+j) % 2 == 0)
                {
                    System.out.print("o");
                }
                else
                {
                    System.out.print("x");
                }
            }
            System.out.print("\n");
        }
    }
}
```

4.



```
public class FourB {  
    public static void main(String[] args) {  
        int x = 6;  
        switch(x)  
        {  
            case 5:  
                for(int i=0; i<x; i++)  
                {  
                    System.out.print("*");  
                }  
                System.out.print("\n");  
                break;  
            case 6:  
                for(int i=0; i<x; i+=2)  
                {  
                    System.out.print("x");  
                    x++;  
                }  
                System.out.print("\n");  
            case 7:  
                for(int i=x; i>0; i-=2)  
                {  
                    System.out.print("o");  
                    i++;  
                }  
                System.out.print("\n");  
            default:  
                break;  
        }  
    }  
}
```

Answer key

1. E
2. B
3. BDE
4. D
5. A
6. C
7. D
8. C
9. CDE
10. D
11. E
12. E
13. C
14. C
15. D
16. B
17. C
18. B
19. C
20. E