

COMP 248 - Tutorial #7

More complex for statements and very simple 1D arrays

Question 1

Write a program to compute PI:

$$\pi = 4 \times \left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \frac{1}{13} - \frac{1}{15} + \dots \right)$$

- a) Use a for loop (10000 iteration) and % symbol to find odd numbers.
- b) Use a for loop (10000 iteration) but don't use % symbol to find odd numbers.

Question 2

Given a sorted array, write a program to find the kth largest element in an array:

[1,2,3,4,5,6,7,8,9]

Question 3

Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

Use a for loop to solve this problem.

Question 4

What's the output of the following program:

```
int[] a = {9, 8, 7, 6, 5, 4, 3, 2, 1};
for(int i=0; i<a.length; i++) {
    for(int j=0; j<a.length - i - 1; j++) {
        if(a[j] > a[j + 1]) { // swap if a[j] > a[j + 1]
            int tmp = a[j];
            a[j]= a[j + 1];
```

```

        a[j + 1] = tmp;
    }
}

System.out.println(Arrays.toString(a));

```

Question 5

Write a program to draw the following shapes:

a)

```

*
**
***
****
*****

```

b)

```

      *
     ***
    *****
   ********
  **********
 **********
 **********

```

Question 6

Write a nested for loop to display the following output:

```

a b c d e
b c d e
c d e
d e
e

```

Question 7

What is the output of the following:

a)

```

for (int i = 1; ++i < 4; )
    System.out.print(i);

```

b)

```
for (int i = 1; i < 4; i++)  
    System.out.print(i);
```

c)

```
for (int i = 1; i++ < 4; )  
    System.out.print(i);
```

d)

```
for (int i = 1; i < 4; ++i)  
    System.out.print(i);
```

Question 8:

Write a program that show the multiplication table

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12	15	18	21	24	27
4	8	12	16	20	24	28	32	36
5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	54
7	14	21	28	35	42	49	56	63
8	16	24	32	40	48	56	64	72
9	18	27	36	45	54	63	72	81

Question 9

Encrypt the following sentence using a for loop, by adding 1 to the ascii of each of its characters:

“Hello world”

Question 10

Display the content of the following arrays:

```
int[] i = new int[5];  
boolean[] b = new boolean[5];  
char[] c = new char[5];  
String[] s = new String[5];
```

```
double[] d = new double[5];
```

```
System.out.println(Arrays.toString(i));
```

```
System.out.println(Arrays.toString(b));
```

```
System.out.println(Arrays.toString(c));
```

```
System.out.println(Arrays.toString(s));
```

```
System.out.println(Arrays.toString(d));
```

Question 11

Are the below declarations correct:

a) `Int[] a = new int[5]`

b) `Int a[] = new int[5]`

c) `Int[] a = {1, 2, 3}`

d) `Int a[] = {1, 2, 3}`

e) `Int a[] = {'a', 'b', 'c'}`

f) `char a[] = {'a', 'b', 'c'}`

g) `char a[] = {1, 2, 3}`