Computer Programming
Lab 5

2018.03.30

Strings as user input

```
import java.util.*;

public class ScanName{

public static void main(String[] args) {

        Scanner console = new Scanner(System.in);

        System.out.print("What is your name? ");

        String name = console.next();

        System.out.println(name);

}} console.next() . reads a word
```

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String methods

```
public class StringExample{

        public static void main(String[] args) {

                String name = "Computer Programming"; System.out.println(name.length()); System.out.println(name.substring(0,1));
                System.out.println(name.substring(1,3));

        }

}
```

length() . number of characters in this string

Substring(index1,index2) . the characters in this string from index1(inclusive) to index2(exclusive)

String method example

```
public class StringExample{

	public static void main(String[] args) {

		String name = "e1v2e3n n4u5m6b7e8r i1n2d3e4x w5i6l7l b8e p2r3i4n5t6e7d";

		String result = "";

		for(int i=0;I < name.length();i=i+2) {

			result=result+name.substring(i,i+1);

		}

		System.out.print(result);

	}

}
```

While loop

```
public class WhileExample{
        public static void main(String[] args) {
                Int i=0;int sum = 0;
                while(i<10){
                        sum+=i;
                        i++;
                }
        }
}
```

Task

Make a program which receives one word and prints string like

input : “abcde”

output : “a1b2c3d4e5”

Task

Make a program which receives one numeric word(string type), add each digit in the number, and print it. you can use Integer.parseInt();

Integer.parseInt(“1”); is integer 1

Integer.parseInt(“9”); is integer 9

input : “12345” output : 15

Optional task - 1

Write a Java program **Spiral.java** that displays numbers in spiral format.

This program receives a positive integer console input n and displays n by n matrix. For example, when n=4 is given, it displays as follows:

1 2 3 4

12 13 14 5

11 16 15 6

10 9 8 7

Note that numbers in each row are separated by \t character. Since n is 4, we make a 4 by 4 matrix containing integers from 1 to 16 in the clockwise direction as follows. The number string starts from upper leftn We can extend this idea to any positive integer n. An example of input and output

where n equals to 3 is

n: 3

1 2 3

8 9 4

7 6 5

Optional task - 2

Two arrays A and B are considered to be **equal** if both arrays have the same length, and one of the arrays can be rotated to match all contents of the other.
e.g.) The arrays [-1, 0, 1, 2, -2], [-2, -1, 0, 1, 2], [2, -2, -1, 0, 1], [1, 2, -2, -1, 0] and [0, 1, 2, -2, -1] are all considered equal, as they are all rotations of each other.

Input example

```
5                   /*number of arrays*/
3 3 3 3 3           /*size of arrays*/
2 2 3               /*element 1 of array1 … element n1 of array1*/
2 3 2               /*element 1 of array2 … element n2 of array2*/
3 2 3               ...
2 2 3               ...
3 2 2               /*element 1 of arrayn … element n5 of arrayn*/
```

Output

```
6                   /*number of array pairs(2 arrays) of equal arrays*/
```

Optional task - 3

Write a java program that reads encrypt/decrypt choice, string, and key, and outputs the following

Characters of the input string should consist of {a~z}, {A~Z}, {1~9} (remember 0 is not permitted!!)

1. Encryption

If the choice is encryption, you should encrypt the input as follows:

([char] + [key]) mod 61

2. Decryption If the choice is decryption, you should recover encrypted message as follows:

([encrypt] – [key]) mod 61

Optional task(continued)

Output example

Encrypt (1) Decrypt(2) : 1

Enter string : abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ123456789

Enter key value : 10

klmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ123456789abcdefghij

Encrypt (1) Decrypt(2) : 2

Enter string : klmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ123456789abcdefghij

Enter key value : 10

abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ123456789