MIT AITI
Java Software Development

Lab 01: Skills Assessment Test

This lab serves to test basic Java programming, and covers mostly loops, if statements and arrays. If you are not familiar with some of the concepts, don't worry, I will help you to catch up. If you have previous Java experience this lab will help you revise some of the basics.

- For this lab, please do not cooperate
- If you cannot do parts of the test, don't worry! Just skip them
- If you are stuck or need a small hint, just ask me
- Ask me if you don't understand the problem statement!

Let's get started!

1. Write a code that prints out "Hello World"

2. For the numbers from 1 to 100, print out whether a number is divisible by 3, 5 or both. If the number is neither divisible by 3 nor by 5, print out the number. The solution should like along the lines of:

```
1
2
Div3
4
Div5
Div3
7
8
Div3
Div5
11
Div3
13
14
Div3Div5

And so on
```
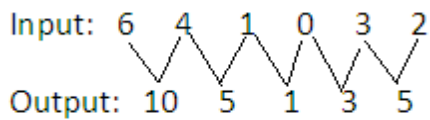
3. a) Use a nested loop (loop within a loop) to print out the following:

```
1
12
123
1234
12345
123456
```

b) Can you do it with one loop?

4. Write a method that reduces an array in the following way:

Input: 6 4 1 0 3 2

Output: 10 5 1 3 5

i.e. the first entry of the output array (10) is the sum of the first two entries of the input entry (6 and 4), and so on (5=4+1, …)

Using

```
public static int[] reduce(int[] a)
{
//Code here
}
```

Note that if the input to the method is a single element array, the output should be equal to the input

Then call the method in your main method to
- Reduce an array once
- Reduce an array twice in that way
- Reduce an array down to one single entry

5. Write a code that asks the user for a number, and then outputs the sum of the individual digits of that number, for example if the user inputs 23834, the program should output 20 (as 20=2+3+8+3+4).

You can use the following method:

```
static int readInt()
{
    Scanner scanner = new Scanner(System.in);
    System.out.print("Enter an integer: ");
    return scanner.nextInt();
}
```

Which you should call from your main method. Don't forget to import Java Utilities:
import java.util.*;