

South Louisiana Community College
ASDV 1220, Programming Fundamentals
Lab 11

Work with same partner unless your instructor reassigns you to work with another partner! Use ONE computer together with your partner. ALTERNATE the roles of Coder, Navigator in each problem.

Learning Objectives

After completion of this lab, you should be able to

1. Understand for loops
2. Understand while loops
3. Understand do-while loops

Create project Lab11

Problem 1

Create a class **For1**, write the code as shown below that prints numbers 0 to 9.

```
1 package lab11;
2
3 public class For1
4 {
5     public static void main(String ... ar)
6     {
7         for ( int i=0; i < 10; ++i )
8             System.out.println ( i );
9     }
10 }
```

Problem 2

Create a class **For2**, write code that prints the square roots (not rounded) of numbers 10 to 19.

Problem 3

Create a class **While1**, write code as shown below that prints the numbers 0 to 9. Observe how **variable-i** is incremented every time through the loop just before the end of the body of the loop.

```
1 package lab11;
2 public class While1
3 {
4     public static void main(String[] args)
5     {
6         int i = 0;
7         while ( i < 10 )
8         {
9             System.out.println ( i );
10            ++i;
11        }
12    }
13 }
14 }
```

Problem 4

Create a class **While2**, write code as shown below that prints numbers 0 to 9. Understand how **variable-i** has to be **post-incremented** inside the println-statement every time through the loop.

Problems 3 and 4 are equivalent.

```
1 package lab11;
2 public class While2
3 {
4     public static void main(String[] args)
5     {
6         int i = 0;
7         while ( i < 10 )
8             System.out.println ( i++ );
9     }
10 }
```

Problem 5

Create a class **While3**, write code to print 11 numbers from 10 down to 0.

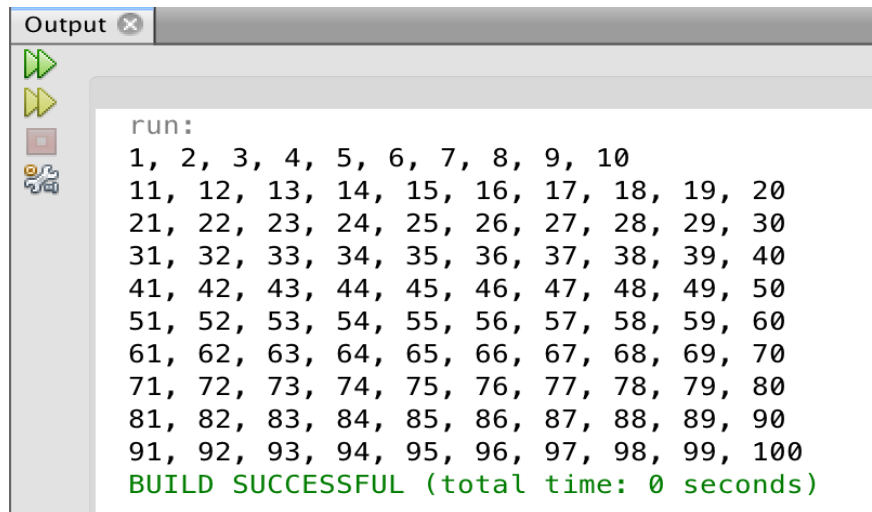
Problem 6

Create a class **DoWhile1**, write code as shown below that prints numbers 0 to 9. Observe how **variable-i** is incremented every time through the loop just before the end of the body of the loop.

```
1 package lab11;
2 public class DoWhile1
3 {
4     public static void main(String[] args)
5     {
6         int i = 0;
7         do
8         {
9             System.out.println ( i );
10            i++;
11        }
12        while ( i < 10 );
13    }
14 }
```

Problem 7

Create a class **DoWhile2**, write code to print 100 numbers from 1 to 100, 10 per line where each number is separated by a comma. No comma is needed at the end of each line. Use the backspace escape character to eliminate the last comma in each line.



```
Output x
run:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10
11, 12, 13, 14, 15, 16, 17, 18, 19, 20
21, 22, 23, 24, 25, 26, 27, 28, 29, 30
31, 32, 33, 34, 35, 36, 37, 38, 39, 40
41, 42, 43, 44, 45, 46, 47, 48, 49, 50
51, 52, 53, 54, 55, 56, 57, 58, 59, 60
61, 62, 63, 64, 65, 66, 67, 68, 69, 70
71, 72, 73, 74, 75, 76, 77, 78, 79, 80
81, 82, 83, 84, 85, 86, 87, 88, 89, 90
91, 92, 93, 94, 95, 96, 97, 98, 99, 100
BUILD SUCCESSFUL (total time: 0 seconds)
```

Problem 8

Create a class **WhileEvent1**, write code as shown below that asks the user to enter a number or -1 to quit the program. When out of the loop, the sum of all numbers entered is printed. Read and understand the comments about the **CONDITION** and the **TASK** of the loop. It is **IMPORTANT** for you to know how you design a while-loop by answering every time you design the loop these 6 questions: 1.What is the condition? 2.How the condition is initialized? 3.How the condition is updated? 4.What is the task being repeated? 5.How is the task initialized before entering the loop? 6.How is the task updated every time through the loop?

```
1 package lab11;
2 import java.util.Scanner;
3
4 public class WhileEvent1
5 {
6     public static void main(String ... ar)
7     {
8         System.out.println( "Please enter a positive number to add it to sum or -1 to quit");
9         Scanner scan = new Scanner( System.in);
10        int num = scan.nextInt(); //2 condition: Initialize the condition of loop
11        int sum = 0; //1 task: Initialize the task
12        while ( num != -1 )//1 condition: What is the condition?
13        {
14            sum += num; //2 task: task of the loop and its update
15            System.out.println( "Please enter a positive number to add it to sum or -1 to quit");
16            num = scan.nextInt(); //3 condition: Update the condition of the loop.
17        }
18
19        System.out.println( "Total: " + sum);
20    }
21 }
```

Problem 9

Create a class **DoWhileEvent2**, which behaves identically as **WhileEvent1**(Problem 7). Use a do while loop.

Problem 10

Create a class **DoWhileEvent1**, write code as shown below that ask the user to enter a positive number or -1 to quit the program. **Replace the conditional statement of line 15 (bulb)** with a simple if. Do not replace it with if-else, as the else of the if-else is 'sum = sum' (not an error to use 'else' but it is extraneous).

```
1 package lab11;
2 import java.util.Scanner;
3
4 public class DoWhileEvent1
5 {
6     public static void main(String ... ar)
7     {
8         Scanner scan = new Scanner( System.in);
9         int num = 0;
10        int sum = 0;
11        do
12        {
13            System.out.println( "Please enter a positive number to add it to sum or -1 to quit: ");
14            num = scan.nextInt(); //3 condition: Update the condition of the loop.
15            sum = num != -1 ? sum + num : sum;
16        }
17        while ( num != -1 );
18
19        System.out.println( "Total: " + sum);
20    }
21 }
```

Problem 11

Create a class **WhileEvent3**, write code that asks the user to enter a *positive* or *negative* number or 'x' 'X' to quit the program. When out of the loop the sum of all numbers entered is printed. READ THE USER'S input as **String** an not as integer.

Problem 12

Create a class **DoWhileEvent3**, write code that ask the user to enter a *positive* or *negative* number or 'x' 'X' to quit the program. When out of the loop the sum of all numbers entered is printed. READ THE USER'S input as String an not as integer. Use a do while loop.