Lab 05 – Loops & Strings

Objectives

- Problem Solving using loops and Strings
- Design algorithms and write Java programs

Preparation

- Chapter 4 and 5

Problem Statement

Q1- Binary to decimal

a. **[15 marks]** Design an algorithm that displays the decimal value of a binary number given by user. The program first prompts the user to enter a string which represents a valid binary number in signed magnitude format. Consider this binary number is positive, and it may or may not have faction part. Use flowchart to represent your algorithm.
   Do not use Integer.parseInt(String, int) or any other build-in methods from API to answer this exercise. You only allowed to use java methods that discussed in the lecture notes so far.
b. **[10 marks]** Write a java program named **B2D.java** to implement your algorithm from previous part.

Note- since we have already provided a flowchart in part a, you don't need to provide external documentation for part b.

Q2- [25 marks] Display special numbers in a tabular format

Write a program named **Specials.java** that finds and displays the special numbers between 10 and 1000, exclusive. Display seven special numbers per line. Numbers are separated by space. Use ***`printf`*** and format specifier to make your output tabular.

Special number is a number that is sum of digits in odd position is equal to sum of digits in even positions. For example, 2134 is an special number since 4+1 equals to 2+3; However 1234 is not a special number since 4+2 is not equal to 3+1.

Submission

Make a folder containing your source codes (.java files) and external documentation (.pdf file), zip the folder and submit the zip file named **Lastname-FirstName-StudentID.zip** to D2L. Check LabGuide (section 3) to find out more details about your submission and grading.