Lab 05 – Loops & Strings

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CPSC 1150
19/06/2023

Q1 – Binary to decimal

Program B2D

File name: lab05\B2D.java

Purpose: Convert binary number entered by user to decimal and display it on the console.

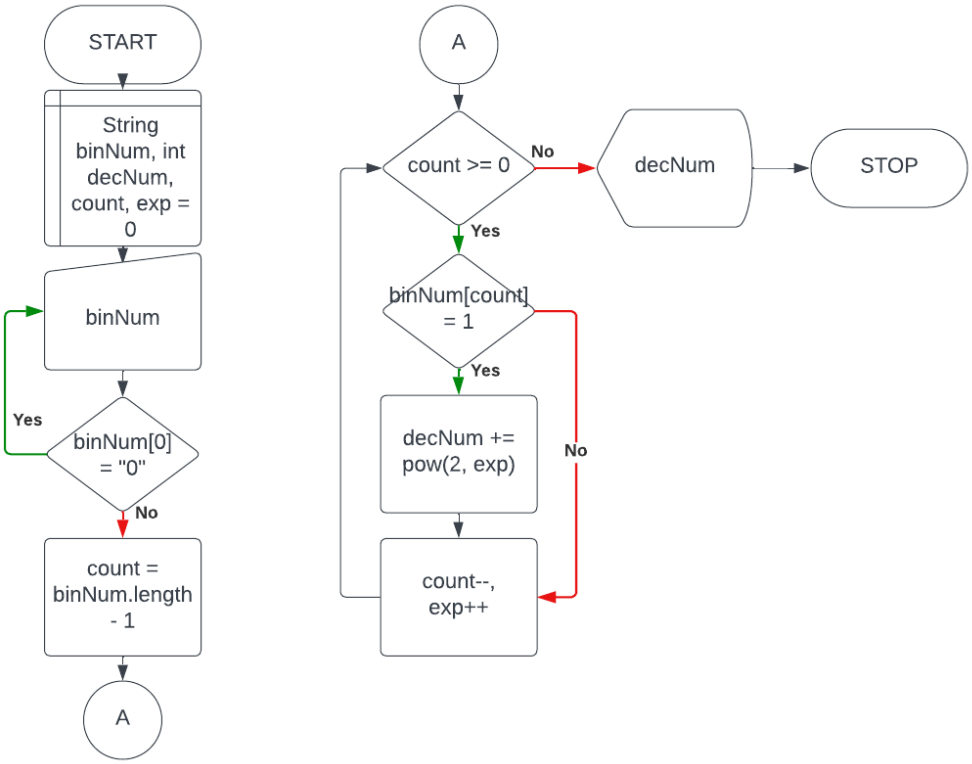
Packages: java.util.Scanner

Limitations: It can't handle any other characters other than '0' and '1'.

Input: A binary number stored in a String. The binary number is expected to be a positive number. The variable containing the input is *binNum*.

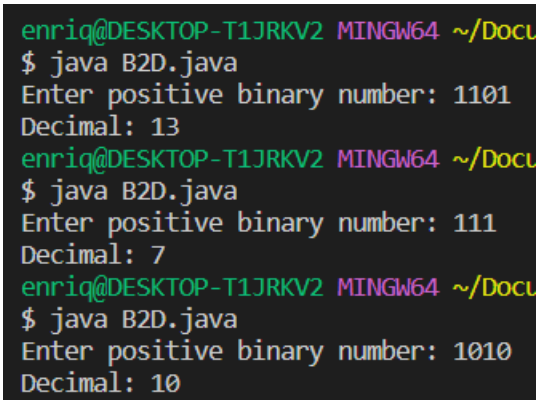
Output: An integer number equal to the input in decimal form. The value is stored in the variable *decNum*.

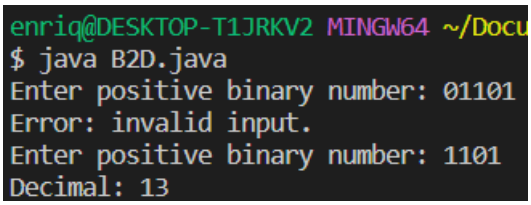
Flowchart:



Test runs:

binNum (Input)	decNum (Output)
1101	13
111	7
1010	1010





Q2 – Display special numbers in tabular format

Program Specials

File name: lab05\Specials.java

Purpose: To find and display in tabular format the special numbers between 10 and 1000 (exclusive). Special number being one that the sum of its odd position digits equals the sum of its even position digits.

Input: Not needed.

Output: Several lines in tabular format containing the special numbers in the specified range.

Pseudocode:

Algorithm (program name)
START

1. Set *i* = 11
2. Set *j* = 0
3. Repeat while *i* < 1000 is true
    a. If (*i* / 100 + *i* % 10) = ((*i* / 10) % 10) then
        i. Print *i*
        ii. *j*++
    b. If *j* = 7 then
        i. Print new line
        ii. *j* = 0
    c. *i*++

END (program name)

Test run:

```
enriq@DESKTOP-T1JRKV2 MINGW64
$ java Specials.java
 11  22  33  44  55  66  77
 88  99 110 121 132 143 154
165 176 187 198 220 231 242
253 264 275 286 297 330 341
352 363 374 385 396 440 451
462 473 484 495 550 561 572
583 594 660 671 682 693 770
781 792 880 891 990
```