

## LAB 7: ITECalculator

In lab 6, you have create number system conversion that will be able to convert from binary, octal, and decimal. but you have not done hexadecimal and protected against the user input yet. In this lab, you will add helper methods that can be used to protect against the user input and do hexadecimal.

A. Add the following methods to the `NumberSystemConversion` class:

- `hex2Binary(datatype hex)` to convert from **hexadecimal** to **binary**
- `hex2Octal(datatype hex)` to convert from **hexadecimal** to **octal**
- `hex2Decimal(datatype hex)` to convert from **hexadecimal** to **decimal**

B. Add a new submenu "**Hexadecimal**"

C. When the user choose "**Hexadecimal**" submenu, it will show

- **Hexadecimal**
  - Hexadecimal to Binary
  - Hexadecimal to Octal
  - Hexadecimal to Decimal

D. Add the following helper methods to the `NumberSystemConversion` class:

- `isValidBinary`: The helper method that receive `String` that the user inputs and check whether it is valid binary numbers or not. If the input `String` is valid numbers in binary, this function will return the `true`. Otherwise, `false`.

- **isValidOctal**: The helper method that receive **String** that the user inputs and check whether it is valid octal (0-7) numbers or not. If the input **String** is valid numbers in octal, this function will return the **true**. Otherwise, **false**.
  - **isValidDecimal**: The helper method that receive **String** that the user inputs and check whether it is valid decimal numbers or not. If the input **String** is valid numbers in decimal, this function will return the **true**. Otherwise, **false**.
  - **isValidHex**: The helper method that receive **String** that the user inputs and check whether it is valid hexadecimal numbers or not. If the input **String** is valid numbers in hexadecimal, this function will return the **true**. Otherwise, **false**.
- E. In the main function, please use this function check whether what the use input is a valid number or not by using this function. If it is a valid, you can start to convert it.