CMPS 312 Mobile Application Development
LAB 2: Kotlin Fundamentals I

Objective

In this lab you will practice:

- Kotlin language fundamental constructs
- Higher order functions to search, filter, map and process collections of data

Overview

PART A : Warmup exercises on Kotlin Basics
PART B : You will create an android app that apply the concepts you practiced in PART A

PART A – Kotlin Basics

1. Write a program that displays all the even numbers from 1 to 100. You should display the results in the same format as shown below. [**use for-in**]

```
2 4 6 8 10
12 14 16 18 20
22 24 26 28 30
32 34 36 38 40
42 44 46 48 50
52 54 56 58 60
62 64 66 68 70
72 74 76 78 80
82 84 86 88 90
92 94 96 98 100
```

2. Write and test `getLetterGrade` function that takes a numeric score and returns the corresponding letter grade.
   e.g. If the score = 85, then the function should return B+. You can use the below table to identify the ranges for each letter grade. [Hint : use the **when** operator and **NOT if-else]**

Grade Symbol	Description	Percentage
A	Excellent	90 to 100
B+	Very Good	85 to < 90
B	Very Good	80 to < 85
C+	Good	75 to < 80
C	Good	70 to < 75
D+	Pass	65 to < 70
D	Pass	60 to < 65
F	Fail	Less than 60

3. - Write a class **Friend** that has 3 properties: firstname , lastname and gender. The gender should have "M" as a default value.
   - Add a toString method to return a string representation of the object with Mr. title for male and Ms. title for female. E.g., Mr. Abdulahi Hassen or Ms. Fatima Hamza
   - Create a main function. Inside it declare a friends list and initialize with a list of friends shown the table below:

Firstname	Lastname	Gender
Abdulahi	Hassen	M
Fatima	Hamza	F
Fiona	Shrek	F
Abbas	Ibn Fernas	

- Loop through the friends list and display their details

4. Create cities list and initialize it with "Doha", "Tokyo", "Delhi"
    a. Add “Dhaka” to the list
    b. Add “Beijing” to the list
    c. Create and test a **display** function that takes a list of strings and prints the list elements.
    d. Sort the cities list alphabetically then display it
    e. Sort the cities list in alphabetically in reverse order then display it.
    f. Remove Beijing from the list of cities

Output

```
43211234567891234__________ cities __________
Doha
Tokyo
Delhi
__________ After adding Dhaka to the end __________
Doha
Tokyo
Delhi
Dhaka
__________ After adding Beijing to the beginning __________
Beijing
Doha
Tokyo
Delhi
Dhaka
__________ Sorted Cities by alphabetically __________
Beijing
Delhi
Dhaka
Doha
Tokyo
__________ Sorted Cities by alphabetically in reverse __________
Tokyo
Doha
Dhaka
Delhi
Beijing
__________ Cities after removing Beijing  __________
Tokyo
Doha
Dhaka
Delhi
```

5. Create **nums** variable to hold a range of values from 5 to 50. [**Hint use the range .. operator**]. Complete the following tasks using lambdas and **without using loops**:
    a. Display the elements in **nums**
    b. Create and test **`min`** and **`max`** functions to return the minimum and maximum values in **nums**
    c. Create and test **`sum`** function to return the sum of elements in **nums** [**Use reduce or fold function**]
    d. Create and test **`average`** function to return the average of elements in **nums**
    e. Cube every number in **nums** and save the result in **cubicNums.** Display the elements in cubNums.

PART B

Using the concepts you practiced in part A, develop the following android application.

Create an android application called Spin the wheel. The application allows the user to randomly pick a winner a list names. The user first enters names to initialize the list of names. Then when the user presses on the spin button, the application should pick one random name from the list and display it on the screen as the winner. Below is a demo of the app.