**Exam –** **01**

**50 points**

For this exam, you will be creating the "Blood Glucose Monitor 🩸" Application for checking the HbA1c and identify the appropriate diabetic condition and provide some recommendation. This app allows users to input Patient id, Fasting Glucose Blood (FBG) levels. Finally, it calculates HbA1c range and displays Patient ID, FBG levels, HbA1c range, Result, One Health tip and image for each case.

1. **Instructions to create the project.**

Create a project in XCode with the name “**LastName\_Exam01**”.

While creating the app make sure to follow minimum deployment and project format as shown below:

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**Fig 01: Minimum Deployment**

1. **Instructions to create the Blood Glucose Test App**
2. The UI of the app is shown in below figure. The app is designed to receive user inputs for the Patient ID and Fasting Blood Glucose (FBG) levels. Subsequently, it calculates the HbA1c range and displays the Patient name, FBG levels, HbA1c range, Result, one Health Tip, and an accompanying image for each case. (Images are provided in the Zip File).
3. Your app should consist of the following UI components..2
   1. A header Label that displays “Blood Glucose Test 🩸” in your choice of color.
   2. A text field to enter the Patient ID.
   3. A text field to enter Fasting Blood Glucose levels.
   4. Two buttons, one for calculating the HbA1c range and other for resetting all the text fields, label, and the ImageView.
   5. A label to display Results.
   6. An image view to display a relevant image based on Result.

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**Fig 02: UI Components**

1. Use the following formula and ranges for calculations.

Formula, HbA1c = 2.6 + 0.03 × FBG

**HbA1c Ranges:**

Hypoglycemia: below 4.70 %

Normal range: 4.70 % - 5.60 %

Prediabetes: 5.61 % - 6.35 %

Diabetes: more than 6.35 %

1. Perform the test cases shown in Table 01 (Your app must pass the below test cases).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case** | **FBG level** | **HbA1c** | **Result** | **Health Tip** |
| Test case – 1 | 0 – 69 | < 4.70 | Hypoglycemia | Eat food on time 🍎 |
| Test case – 2 | 70 - 99 | 4.70 – 5.59 | Normal | You are doing great 👍 |
| Test case – 3 | 100 - 125 | 5.60 – 6.35 | Pre-Diabetes | You should work on your diet and maintain workout 🏋️ |
| Test case – 4 | 126 + | > 6.35 | Diabetes | Consult doctor for medication 🩺 |

**Table 01: Test Cases**

1. Implement the following logic:
   1. When a user enters the Fasting Blood Glucose (FBG) levels, we take it as input,

and calculate the HbA1c by using the above formula.

* 1. Now using HbA1c ranges, print appropriate output as given in above test cases and appropriate image for each case.
  2. Finally, write the code for Reset Button which clears all the text fields, text in the label and ImageView as well.

1. Refer the below images for sample outputs.

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**Fig.03 – Default View Fig.04 – Test Case-01**

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**Fig.05 – Test Case-02**  **Fig.06 – Test Case-03**

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**Fig.07 – Test Case 04 Fig.08 – Reset Button View**

1. **Submission Instructions:**
2. Save your XCode project.
3. Compress the folder and submit it to exam 1.