**Mobile Computing – iOS Fall’23**

**Engagement02**

**10 Points**

**Please follow the following instructions to complete this assignment.**

1. Open Xcode from the launchpad of your Mac.
2. Click on create a new Xcode project. Select the iOS template and click on the App application.
3. Click on next which will prompt you to choose options for the project.
4. Provide product name as **LastnameWeightOnOtherPlanets**, “**edu.nwmissouri.fall23.cs44643**” for organization identifier, “**Storyboard**” as interface and “**Swift**” as the language.
5. Click on next and select an appropriate location to save your app and click on create. A project directory will be loaded.
6. From the project navigator click on “Main.storyboard” file, a blank mobile screen will be loaded, where the required fields for an app need to be added.

**The View**

Table 1 WeightCalculatorVC’s outlets and actions

|  |  |  |
| --- | --- | --- |
| **UI element** | **Purpose** | **Outlet/action name** |
| I UILabel | To display title “Weight Calculator™️” | n/a |
| 1 UITextField | To input weight of the user | weightTF |
| 1 UILabel | To display word “in” | n/a |
| 1 UILabel | To display word “Units” | n/a |
| 2 UIPickerView | To pick units of user’s weight | unitsPicker |
| To pick the planet | planetPicker |
| 1 UILabel | To display the word “Pick a planet” | n/a |
| 1 UILabel | To display the weight on the planet | messageLBL |
| 1UIButton | To calculate the weight of the user | onCalculate: |
| 1UIButton | To reset the app | onReset: |

*Note: Names that end with a colon (****:****) are actions.*

1. First, you will see a single view (first view) in the Main.storyboard file.
2. Create a Cocoa Touch Class “WeightCalculatorVC” that is a sub class of UIViewController and assign it as class to the first view that is present in the Main.storyboard file. It will be the root view controller of the navigation controller.

A screenshot of a phone

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Figure 1 The View

Table 2 WeightCalculatorVC’s properties for stack views

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stack View** | **Axis** | **Alignment** | **Distribution** | **Spacing** |
| BigContainerSV | Vertical | Fill | Fill | Standard |
| InputSV, UnitPickerSV, PlanetPickerSV | Vertical | Fill | Fill | Standard |
| weightSV, planetSV, buttonsSV | Horizontal | Fill | Fill | Standard |

**The Controller**

1. ***WeightCalculatorVC***
   1. Create outlets and actions are per *Table 1***.**
   2. Design the UI as per *Figure 1* and *Table 2*.
   3. The user can enter his/her weight in any units (for example: kg, pounds, ounce etc.,). To calculate the weight, first convert the units of weight into “kg”. Use the below table to know the conversions:

|  |  |
| --- | --- |
| 1 kg | = 106 mg |
| = 1000 g |
| = 2.204 lb (pounds) |
| = 35.274 oz (ounce) |

* 1. In general, Weight of a person is calculated using the formula:

m – mass of person (in kg)

g – gravity of planet (in m/s2)

W – weight (in N)

To calculate the weight of a person on other planet, use the formula:

* 1. Follow the below table for the gravity (g) of the planets.

|  |  |
| --- | --- |
| **Gravity of Planet (m/s2)** | |
| Mars/Mercury | 3.7 |
| Venus | 8.9 |
| Earth | 9.8 |
| Jupiter | 23.1 |
| Saturn | 9.0 |
| Uranus | 8.7 |
| Neptune | 11.0 |
| Pluto | 0.7 |
| Sun | 274 |
| Moon | 1.6 |

* 1. When the calculate button is pressed the Weight is calculated and display it in the message label (round the weight to 2 decimal points).
  2. When the reset button is pressed all the values are restored to defaults.
  3. Display the following error message for the mentioned conditions:
     1. Input (weight) is empty or invalid input (like alphabets, symbols) – “Provide valid weight in the text field”.
     2. Units aren’t mentioned – “Provide units for the weight”.
     3. Planet isn’t selected – “Choose a specific planet to calculate the weight”.
     4. **Note:** Must use Enums for units and planets.

A screen shot of a computer code

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Figure 2 Sample enums structures’ for a Unit and Planet

**Submission:** Push your entire Xcode project to your private GitHub repo and submit your private repository link on the Canvas via Text Entry.