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Professor Kyu

CS 7

No Date

Programming Assignment 7-11

1. Problem Definition

   a. Using the matplotlib and numpy modules the program will create a grouped bar

      graph of the grades of the students "Bill" and "Mary" in the following classes:

      Math

      English

      Physics

      Computer

      Bill's is displayed on the left and Mary's on the right.

2. Input and Output

   a. **Input:** None

   b. **Output:** The group bar graph of Bill and Mary's grade

3. Variables

   a. **Labels**= the names of the x coordinates which are Bill and Mary, respectively.

   b. **Math** = Bill and Mary's math grades[list]

   c. **English** = Bill and Mary's english grades[list]

   d. **Physics** = Bill and Mary's physics grades[list]

   e. **Computer** = Bill and Mary's computer grades[list]

   f. **width** = the width of each bar

g. **bar1** = used to place the first bar by subtracting the width from x and then multiplies it by 1.5.

h. **bar2** = used to place the second bar next to the first one by subtracting the width from x and then multiplying it by 0.5

i. **bar3** = used to place the third bar next to the second one by subtracting the width from x and then multiplying it by 1.5

j. **bar4** = used to place the fourth bar next to the third one by subtracting the width from x and then multiplying it by 0.5

4. Lessons and Errors

   a. **No Errors experienced while writing this code.**

   b. **Lessons:**

      i. Learned the function of ax.set_title in order to change the title of the bar graph.

      ii. Learned the function of ax.legend() in order to add the list of classes into the graph.

      iii. Learned the function ax.set_xticks to place a tick in the x coordinate

      iv. Learned the function of ax.bar_label to set labels at the top of bar graphs.