***BE 1600***

***Introduction to***

***Programming and Computation***

***Python Lab***

**Lab 10**

20 points

**Due by the end of the lab session**

Assignment Objectives:

* To understand Python lists
* To use Python lists as a means of storing data
* To demonstrate the use of list methods and operators
* To use tuples as immutable lists
* To give examples of representing data using two-dimensional lists.
* To use nested loops

*Solution for this lab will not be posted on Canvas; however, the solution of any of the lab problems can be discussed in the class upon request of a student.*

All labs must be submitted by the Canvas. **No email or hard copy** is accepted. You must follow the following format:

1. Submit your file to the Canvas. You must submit your file on time; otherwise, you will receive zero.
2. You can upload your file as many times as you like. Only the last attempt counts because the last file you uploaded is the only file your instructor will see.
3. There will be several modules on the Canvas. You need to upload your file using the correct module on the Canvas.
4. Name the lab file: *Lab (labt number)*
5. To upload your file(s):

* In Course Navigation, click the ASSIGNMENTS module.
* Click the title of the assignment.
* Click the **Submit** Assignment button.
* Add **File**. ...
* **Submit** Assignment. ...
* View **Submission**.

*It is your responsibility to make sure that the file is uploaded correctly. If you uploaded a wrong file, you receive zero; files will not be accepted after due date even if you have a prove that the file is created before the due date.*

***Make sure you review the Cheating & Plagiarism policy on Canvas.***

Define the functions below:

1. setOneDim(r): This function takes an integer r, prompts the user to enter r numbers, saves them in a list, and returns the list.
2. printOneDim(oneDim): This function takes a list and prints all values on the same line separated by a space.
3. SetZerosTwoDim(r, c): This function takes two integers (r and c), creates r by c list of lists, initialize all values in the list of lists to 0, and returns the list of lists.
4. doubleColumns(oneDim, twoDim): This function takes a list and a list of lists, copy the list into the first column of list of lists, and set the elements in the remaining columns to two times the corresponding element in the previous column.
5. printTwoDim(twoDim): This function takes list of lists and prints all values in a tabular format; use format string to format the table.
6. main(): Function main
7. Generates a random integer r between 4 and 7
8. Call function setOneDim with r value. Call function printOneDim with the list returned from function setOneDim.
9. Generates a random integer c between 4 and 7
10. Call function setZerosTwoDim with r and c values. Call function printTwoDim with the list of lists returned from function setZerosTwoDim.
11. Call function doubleRows with the list returned from function setOneDim and the list of lists returned from function setZerosTwoDim. Call function printTwoDim with the lists of lists returned from function doubleRows.

Here is a sample run:

