NATIONAL UNIVERSITY
OF COMPUTER & EMERGING SCIENCES
PESHAWAR CAMPUS

Problem Set:	Assignment: AG03	**Semester**:	Fall 2017
Points:	*See autograder*		
Date Set:	*See autograder*	**Due Date**:	*See autograder*
Course:	CS101 Introduction to Computing	**Instructor**:	Dr. Nauman

1 Square Roots and Guesses

Since you are reading this, you have already downloaded and extracted the zip file.

1.1 Tasks to do

1. Open the file `a03.py` and look between the markers. You may ignore the code outside the markers completely.

   You may run the code by typing the following from the shell: `python a03.py`

   This will not run the tests but the code itself.

2. Assumptions and requirements:

   (a) For all these taks, your results must be accurate up to *five decimal places*.

   (b) For the whole assignment, assume no negative numbers will be passed to any functions.

   (c) You must not use the functions in the `math` or another library during this assignment. You must also not use the buit-in Python average function. If you break this rule, you risk getting zero score on the whole assignment.

3. There are three main tasks to complete.

   (a) Write a function with the name `average` that takes in two inputs and calculates the arithmetic mean (simple average) of the two numbers. You must *not* assume anything about the two numbers (other than the fact that they will not be complex).

   (b) Write another function named `improve_guess`. This improvement in guess will be made according to the rule typically associated with the Heron of Alexandia. According to this rule:

   If there is a guess `a` for the square root of a number `x` then the average of `a` and `x/a` is a *better* guess.

   Read through this statement carefully and write the function accordingly. You should use the function `average` defined in the task above within this function.

   (c) Finally, write a function `sqrt` similar to what we wrote in the class, except it should use the new `improve_guess` function you just defined. Assume this function will only be given guesses greater than or equal to 0.

4. You may change the values in function calls at the end of the file `a03.py` to check the functions.

5. Run local tests and if they pass, submit the assignment using the submission command given on the Autograder assignment page. (Same as the first assignment.)