

CS118 Exercises

Library Functions

For the following, import the `math` module:

1. Write a Python program that collects a diameter in centimeters from the user, then computes the circumference of the circle with that diameter. Use the `math` module constant `pi` – do not use your own approximation.
 2. Write a Python program that collects an angle in *degrees* from the user. Use the `math` module constant `pi` to convert the angle to radians. Next, use the `sin()` function to compute the sine of the angle. Use `print()` to display the angle in degrees and radians, and also the sine of the angle.
 3. Write a Python program that collects an angle in *radians* from the user. Use the `sin()` and `cos()` functions to compute the tangent of the angle. Assume the user will never enter an odd multiple of 90 for the angle. Do not use the `tan()` function for this computation, but after it is complete, compute the tangent using the `tan()` function and compare to your results by printing both to 10 decimal places.
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For the following, import the `random` module:

4. Make a Python program that uses the `random()` function to generate five pseudo-random floats. Store each in its own variable. Display the five numbers in the command window to eight decimal places.
 5. Make a copy of #4 and modify it (do the math) so that the five floats lie randomly between 0 and 10 (instead of 0 and 1). Display each to eight decimal places.
 6. Make a copy of #4 and modify it so that the five floats lie randomly between 15 and 30. Display each to eight decimal places.
 7. Make a copy of #6 and modify it so that the five numbers are integers which lie randomly between 15 and 30, **inclusive**. You are to continue using the `random()` function, but you may find other functions useful, too – and not just those in the `random` module. Display each as an integer.
 8. Make a Python program that uses the `randint()` function to generate five pseudo-random integers that lie between 15 and 30. Store each in its own variable. Display the five numbers in the command window
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For the following, import the `os` module:

9. Make a Python program that uses the `getcwd()` function to provide a string of the current working directory. Save the string in the variable `current_folder` and display the value.
10. Make a Python program that uses the `chdir()` function to change the current working directory to the user's home directory – that would be `c:\users\` in Windows or `/Users/<username>` in OS X. Verify that it works by printing out the result of `getcwd()`. [NOTE: Since the backslash can be used to indicate an escape sequence, you will need to use two of them (together) to indicate an actual backslash in the string.]
11. Extend #10 – after confirming that the current working directory is the user's home directory, make a new directory called `my_new_folder` using the `makedirs()` function. Change to that new directory and print out the result of `getcwd()` to confirm that it exists.