Worksheet: Modules (turtles, math, random)

COSC 101, 2018-02-07

1. Write your own TSA pseudo-randomizer app.

2. Write a program that asks for the number of sides on a die and “rolls” the die.

3. Write a program that asks for a circle’s radius and computes the circle’s area and circumference.

4. Write a program that asks for the length of the sides of a right triangle and draws the corresponding triangle. Hint: You’ll need to use Pythagorean theorem \(a^2 + b^2 = c^2\) and the law of sines \(a/sin A = b/sin B = c/sin C\).

5. Write a program that asks for a number between 0 and 3 (inclusive) and draws the corresponding number as it would appear on a simple digital clock.

6. Each person in the group should create a drawing composed only of straight lines. As a group, choose one of the drawings and write a program that recreates the drawing.

7. Write a program that asks for a username and password. If the input matches one of the combinations below, then the program should print ‘Login successful’; otherwise it should print ‘Access denied’.
   
   Username    Password
   alice       colgate
   bob         hamilton
   carlos      python

8. Write a program that tells someone whether they should take the standard deduction ($6,350 for single) on their federal taxes. Your program should ask the user about each of the following possible itemized deductions:
   
   - State sales tax --- use the NY state sales tax rate (4%)
   - Charitable contributions
   - Moving expenses to a first job --- if you move more than 50 miles, you can deduct 23¢ per mile
   - State tax paid the previous year