**CS299 (Yang) Project #2 (50 points)**

# Practice: while and for loops

Problem #1: Number Guessing.

Write a program to do:

1. Let computer randomly generate an integer (i.e. the hidden number) in the range of 1 to 100
2. Ask user to guess a number in the same range, if the user enters wrong (not in range or wrong type of data), allow him/her to try three times, after third time wrong, terminate the program with a message declaring the illegal use of the program.
3. If the user’s guess is the same as the hidden number, print out a message congratulating the winner.
4. If the user’s guess is larger or smaller than the hidden number, print out a message telling the user your guess is too large or too small, and then asks the user to guess again.
5. The user could have up to 5 guesses. If 5 guesses are all wrong, the computer will print out the hidden number, and declare the user as the loser (or the computer as the winner).

Required testing:

Run the program at least three times, with one test of illegal use of program (see (2) above), and at least one time the user is the winner (see (3) above).

Reference: Using random number generator:

import random

hidden = random.randint(1, 100) # hidden will be assigned a random integer in [1, 100]

Problem #2: Perfect number.

A perfect number is one whose factors (except itself) sum to itself. For example, the factors of 6 are 1, 2, 3, and 6. Since 1+2+3=6, so 6 is a perfect number. Write a program that uses for loop and range function to check if an input number is a perfect number or not. For example, enter 6, the output should be: 6 is a perfect number. Enter 9, the output should be: 9 is not a perfect number. (Note: your output format may vary.)

Required testing: 6, 28, 325, 496

Submission requirement:

1. Copy and paste the output of all your test runs to the end of your program and comment out the output
2. Upload your Python program (with output added) to blackboard along the Project 2 link.