Assignment #3
Problem Solving
Due: Sunday, 10/09/16, 11:59pm

(30 pts) Let’s use a game to teach algorithmic thinking. Go to http://robozzle.com.

- After you understand the tutorial, go to the EasytoHard tab to see a list of games to play.
- Under the tab that says EasytoHard, Pick 3 games to play. For each problem:
  - Write down the name and steps needed to solve each of these puzzles.
  - Run the games to make sure your solution works.
  - Are there many solutions to any of the puzzles?

(30 pts) Complete the 3 of the 4 problem-solving steps to solve the following problem. Find the largest number out of 5 random numbers given to you from a friend. Follow the form outlined as follows:

- **Step 1: Problem Analysis.**
  a. Comments about the problem to aid in understanding it.
  b. Description of the knowledge base (this list would include what you would be expected to know to follow the solution).
  c. What are the various solutions? Weigh pros and cons and pick one.

- **Step 2: Program Design.** List the specific steps that would enable another person to find the largest among the 5 numbers presented. Remember, you have to be very explicit here to make sure one can actually accomplish the task using your directions.
  1.
  2.
  3.
  ....

- **Step 4: Program Testing.**
  Create a Test Plan with several test cases including the average and extreme cases.

(10 pts) How does your solution/program design change if the size of the list is 50, 500, or n, instead of 5?

(30 pts) On a piece of paper, use your Lab #2 knowledge to write the Python3 syntax that would correspond to the algorithm you specified in Assignment #2 for converting a positive number less than 256 to binary. You can now use variables and built-in functions, such as input(), print(), etc., to interact with memory, the keyboard, and the monitor. You do not need to use anything that was not covered in Lab #2. (If you are more advanced, try doing this without using knowledge of conditions and loops!).

- Were you explicit enough in your Assignment #2 algorithm?
- What steps did you have to add or delete to convert it to python syntax?
• What steps/part of your algorithm did you have to alter because you did not know what the corresponding python syntax would be?

Extra Credit (5 pts):
Without using built-in functions, write the steps needed to provide an error message to the user when bad input from your test cases is entered, e.g. -2 prints a bad input message, t prints a bad input message, 2.3 prints a bad input message, etc.

Electronically submit your document as a pdf by the assignment due date, using TEACH: https://secure.engr.oregonstate.edu:8000/teach.php?type=want_auth

Make sure you sign-up with a TA for demoing/explaining your Assignment #2 in week 3. The doodle polls are listed on the course home page beside the TA office hours: http://classes.engr.oregonstate.edu/eecs/fall2016/cs160-001/ You are penalized for failure to schedule an appointment within the week or missing a scheduled appointment. In either case, if you are within 1 day (24 hours) of the deadline, you lose 10 points. If you are within 7 days (1 week) of the deadline, then you lose 25 points, anything outside of a week from the deadline to demo is an automatic 50 point deduction.