MCS 260 Project Three: playing a dice game
due Monday 20 October at 1PM

The goal of the project is to write a program using functional top down design to play a dice
game with your friend the computer. The name of the dice game is “pig”, it belongs to the family
of jeopardy approach games. The rules are described in the next paragraph.

Each turn, the player decides whether to hold or to roll. At hold, the current turn total is
added to the player’s score and it becomes the next player’s turn. At roll, if 1 comes up, the
player scores nothing and the turn passes to the next player, otherwise the number rolled is added
to the current turn total. The game ends when the first player scores 100 or more.

Each time the user is prompted to make a choice between hold or roll, the current total and
the score must be displayed. After each roll, the value of the die and the updated current total is
shown to the player. Also when it is the computer’s turn, the user of the program must see the
value of the die and the updated current total and score.

The computer generates a random integer to decide whether to hold or to roll. For example, if
\texttt{randint(1,4) == 1}, then the computer will hold, otherwise it will roll. Optionally – to make it a
bit more interesting – you could increase the chances the computer will choose hold by decreasing
the upper bound in the \texttt{randint()} after each roll.

Some important points:

1. One of the goals of this project is to use functions.
   Correct programs without the use of functions can only get half of the points.

2. Your top down design should be apparent in the structure of your program.
   Providing appropriate documentation will receive proper credit.
   In particular: every function must have a documentation string of at least one line long.

3. Avoid spelling mistakes in the dialogue with the user.

4. Handing in an incomplete but working program is better than handing in a program that
   crashes or does not run at all.

5. The first line of your Python program must be
   \texttt{# MCS 260 Project Three by <Author>}
   where you replace the \texttt{<Author>} by your name.

6. Email your solution to the project to \texttt{jan@math.uic.edu} before 1PM on Monday 20 October
   so the date of the email is proof of an on time submission.
   Also bring also a printed version of your solution to class.

7. Late submissions before 5PM on Monday 20 October will be discounted with 10 points.

If you have questions or difficulties with the project, feel free to come to my office for help.
As a guide with formatting dialogues, below is a sample session with the program `gamepig.py`, executed at the command prompt $:

```
$ python gamepig.py
Welcome to the game of pig
Score of computer: 0, your score: 0 it is your turn:
  Score: 0, current total: 0, roll or hold? (r/h) r
→ you rolled 3, added to current total: 3
  Score: 0, current total: 3, roll or hold? (r/h) r
→ you rolled 1, scored nothing
Score of computer: 0, your score: 0 computer at play:
→ computer rolled 3, added to current total: 3
→ computer rolled 3, added to current total: 6
→ computer chooses hold
Score of computer: 6, your score: 0 it is your turn:
... omitted output ...
Score of computer: 21, your score: 67 computer at play:
→ computer rolled 6, added to current total: 6
→ computer rolled 4, added to current total: 10
→ computer chooses hold
Score of computer: 31, your score: 67 it is your turn:
  Score: 67, current total: 0, roll or hold? (r/h) r
→ you rolled 4, added to current total: 4
  Score: 67, current total: 4, roll or hold? (r/h) r
→ you rolled 5, added to current total: 9
  Score: 67, current total: 9, roll or hold? (r/h) r
→ you rolled 3, added to current total: 12
  Score: 67, current total: 12, roll or hold? (r/h) r
→ you rolled 4, added to current total: 16
  Score: 67, current total: 16, roll or hold? (r/h) r
→ you rolled 4, added to current total: 20
  Score: 67, current total: 20, roll or hold? (r/h) h
Score of computer: 31, your score: 87 computer at play:
→ computer rolled 1, scored nothing
Score of computer: 31, your score: 87 it is your turn:
  Score: 87, current total: 0, roll or hold? (r/h) r
→ you rolled 2, added to current total: 2
  Score: 87, current total: 2, roll or hold? (r/h) r
→ you rolled 5, added to current total: 7
  Score: 87, current total: 7, roll or hold? (r/h) r
→ you rolled 4, added to current total: 11
  Score: 87, current total: 11, roll or hold? (r/h) r
→ you rolled 2, added to current total: 13
  Score: 87, current total: 13, roll or hold? (r/h) h
You win!
```

$