**Functions and Text Files**

**The Game**

Rock-paper-scissors is a hand game with two players. In one round of the game, the two players simultaneously make one of three hand signs each. The three hand signs are the closed fist signifying a rock, the hand held flat signifying a sheet of paper, and the first and second fingers extended in a V signifying scissors. This is a zero-sum game in which there are only two possible outcomes. The game is a draw if both players choose the same sign. Otherwise, one player wins and one loses according to the following rules: paper wins against rock (paper covers rock), scissors wins over paper (scissors cuts paper), and rock wins over scissors (rock breaks scissors).

Your assignment is to create a program to play the game, with the human user playing against the computer. Each game is interactive, with moves and the outcome being displayed on the screen.

Your program must also create a report in a text file named game\_results.txt that looks like this, in tabular form with percentages displayed with one decimal place:

Total games: 27

# Pct

Human 11 40.7

Computer 7 25.9

Draws 9 33.3

A run of your program should look exactly like this:

Welcome to RPS

Choose (r)ock, (p)aper, or (s)cissors: x

Invalid choice.

Choose (r)ock, (p)aper, or (s)cissors: q

Invalid choice.

Choose (r)ock, (p)aper, or (s)cissors: r

Computer chose scissors

Human won. Congratulations!

Play again? (y or n): y

Choose (r)ock, (p)aper, or (s)cissors: p

Computer chose scissors

Computer won. Better luck next time.

Play again? (y or n): y

Choose (r)ock, (p)aper, or (s)cissors: k

Invalid choice.

Choose (r)ock, (p)aper, or (s)cissors: r

Computer chose rock

No winner; it was a draw.

Play again? (y or n): n

Thank you for playing

In addition to main, your program must have exactly six functions, whose prototypes are as follows:

1. string get\_human\_choice();

2. string get\_computer\_choice();

3. void calculate\_winner(string xxx, string yyy, string& zzz);

4. void create\_report(unsigned xxx, unsigned yyy, unsigned zzz);

5. bool play\_again();

6. unsigned get\_rand\_in\_range(unsigned xxx, unsigned yyy);

1 and 2 must return either “rock”, “paper”, or “scissors”. 1 must use an input validation loop to ensure that the only valid inputs are the characters r, p, and s. 2 must call 6 in order to choose a move at random for the computer.

3 must have its first parameter represent the human's move and its second parameter represent the computer's move. The third parameter must be set to “human\_won”, “computer\_won”, or “draw”.

4 must have its first parameter represent the number of total games, its second parameter represent the number of times the human player won, and its third parameter represent the number of draw games. This is the function that creates the output file.

5 is self-explanatory, except that you don't have to validate the input. Y or y should be accepted as yes, and anything else should mean no.

6 should be used unchanged from the rectangle\_area program previously shared with you.