

# CS120 – Computer Science 1

## Assignment #4

### Spring 2014

In this week's assignment, you will write a program for a game of chance: Roulette. Due Wednesday February 26, start of class.

#### Roulette Revolution

Although we associate roulette with seedy casino gambling, it was invented by mathematician, philosopher, and computing forerunner Blaise Pascal in his failed quest for a perpetual motion machine. Our textbook section 3.5 problem 4 suggests a version of roulette can be constructed by adapting the calculator program so that instead of choosing between addition or multiplication, the user chooses between betting on a number or a color. Your program, Roulette Revolution, will be a simplified version of the betting game roulette with the following properties:

- The colors are Red and White. This is a revolution after all.
- The numbers supported are 0-36. Odd numbers are red, even are white.
- Instead of money, wagers are played using “happiness points”, as in the virtual pet program.
- Each round the player enters two numbers. First the computer asks the player to select the type of bet with -3 for “exit”, -2 for “white”, -1 for “red”, or 0-36 for a numeric bet. The player then selects a positive amount  $\leq$  their available happiness points. The computer then generates a random number from 0-36 and announces the result by writing the number followed by the color (as in: “15 red”). Be sure to call `srand(time(NULL))` to initialize your seed at the start of `main()`, so players cannot exploit your pseudo-random number sequence.
- The payout is 36 for a number bet, 2 for a color bet. The random number 0 does not pay out on a bet on “white”.

When the player reaches 0 or exceeds 1000 happiness points, or if they select “exit”, the program should print the player's point total and end the game. Once you are sure that the program works properly, submit your source file via `cscheck.in`.

#### Example program execution

```
-bash-4.1$ ./a.out
Welcome to Roulette Revolution!
You have 50 happiness points.
Do you want to:
-3) Exit
-2) Bet on White
-1) Bet on Red
```

```
0..36) Bet on a Number
25
Excellent! How much would you like to bet:
25
Thank you! And the ball lands on... 16 White. Sorry!
You have 25 happiness points.
Do you want to:
-3) Exit
-2) Bet on White
-1) Bet on Red
0..36) Bet on a Number
-2
Excellent! How much would you like to bet:
25
Thank you! And the ball lands on...23 Red. Sorry!
You have 0 happiness, and decide that it is time to cheer someone else
up. Goodbye!

-bash-4.1$
```

### Submitting your solution

When your program works as expected, turn it in online through *cscheckin*. Use the name "hw4.cpp" for your source code (the ".cpp" file) and the name "hw4script" for your script file, this helps the TAs find your submissions among those of your classmates. N.B.: the *cscheckin* command is **cscheckin -f filename -c coursename**, where "filename" is the name of the file you want to submit and "coursename" is "cs120".