

# CSCI 145 -- PA 6

## More on Conditionals and Loops

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Feel free to discuss and help each other out but does not imply that you can give away your code or your answers! You cannot work with a lab partner for this assignment. **You must always use the required template (JavaClassTemplate.java from Canvas) and output "Author: Your Name(s)" or "Modified by: Your Name(s)" for each program as applicable.**

Perform as many exercises from chapter 6 of lab book as possible, but the following lab exercises must be completed. You are not required to turn in written answers to various questions, but it is very helpful in understanding important concepts. You might see those questions on quizzes and exams.

- **Exercise 1** -- Rock, Paper, Scissors (run a few times until you get at least one win, one tie, and one loss)
- **Exercise 2** -- Election Day; sample input/output below:

```
Election Day Vote Counting Program
```

```
Votes for Poly: 5<E>
Votes for Ernest: 3<E>
```

```
More precincts? y<E>
```

```
Votes for Poly: 5<E>
Votes for Ernest: 6<E>
```

```
More precincts? n<E>
```

```
Total votes for Polly: 10 (52.6%)
Total votes for Ernest: 9 (47.4%)
```

```
Precincts won by Polly: 1
Precincts won by Ernest: 1
Precincts tie: 0
```

- **Exercise 3** -- Finding Maximum and Minimum Values
  - Change HOUR\_PER\_DAY to 8 (0 to 7) so only need to input 8 values
  - Try: 75 78 77 80 85 83 76 74
  - So max is 85 (hour is 4) and min is 74 (hour is 7)

**Exercise 4** – Modify the Roulette game from previous PA to add the following:

1. Complete the static method called *payoff* in the **Roulette** class, which accepts parameters representing the bet amount, the bet type, and the number bet. Note that the third parameter is not needed if the bet is on color, so the method just ignores the third parameter if applicable. The purpose of this method is to return the amount won by the player (can be 0). The user automatically loses the bet on a zero or double zero. Because there are two types of payoff categories, we will need to determine the payoff amount correctly. If the bet is on a number and if the number bet matches the number on the wheel, the payoff is *NUMBER\_PAYOFF* times the bet (use *NUMBER\_PAYOFF*); otherwise, the payoff is zero. If the bet is on a color and if the color bet matches the color on the wheel, the payoff is 2 times the bet (use *COLOR\_PAYOFF*); otherwise, the payoff is zero.
2. Complete the method called *payment* in the **Player** class that determines the winnings using the *payoff* method from Roulette class, prints the payoff amount, and adds it to the available money. Compile and test the program.

One sample input/output below (comment out your code in spin method and call nextRandom method which grabs the first value of 20 and assign to ballPosition for first round, grabs the second value of 5 and assign to ballPosition for second round, and then grabs the third value of 0 and assign to ballPosition for third round):

Author: [Your Name]

```
Welcome to a simple version of roulette game.
You can place a bet on black, red, or a number.
A color bet is paid 2 the bet amount.
A number bet is paid 35 the bet amount.
You can bet on a number from 1 to 36.
Gamble responsibly. Have fun and good luck!
```

```
Money available for Jane: 100
```

```
Betting Options:
```

1. Bet on black (even numbers)
2. Bet on red (odd numbers)
3. Bet on a number between 1 and 36

```
Enter a bet option, Jane (1, 2, or 3): 1
```

```
You chose option 1
```

```
How much to bet: 5
```

```
You chose to bet $5 on Black color.
```

```
Spinning ...
```

```
Current number: 20, color: Black
```

```
Jane won 10.
```

```
Play again, Jane? [y/n] y
```

```
Money available for Jane: 105
```

```
Betting Options:
```

```

    1. Bet on black (even numbers)
    2. Bet on red (odd numbers)
    3. Bet on a number between 1 and 36

Enter a bet option, Jane (1, 2, or 3): 3
You chose option 3
Enter a number: 39
Invalid number (must be between 1 and 36).
Enter a number: 5
How much to bet: 2
You chose to bet $2 on number 5.

Spinning ...
Current number: 4, color: Red

Jane won 70.
Play again, Jane? [y/n] y

Money available for Jane: 173
Betting Options:
    1. Bet on black (even numbers)
    2. Bet on red (odd numbers)
    3. Bet on a number between 1 and 36

Enter a bet option, Jane (1, 2, or 3): 2
You chose option 2
How much to bet: 0
Invalid amount (must be at least 1).
How much to bet: 10
You chose to bet $10 on Red color.

Spinning ...
Current number: 0, color: Green

Jane lost this round.
Play again, Jane? [y/n] n

Jane won 63 for this game.
Game over! Thanks for playing.

```

Try another sample input/output (comment out call to nextRandom method and use your code in spin method) and make at least three bets before stopping playing.

**Question 1:** Explain how conditional operator (? :) works. When should we use it?

**Question 2:** Given the “while loop”, “do-while loop”, and “for loop”, which one is different from the other two loops? Explain why.

You will only earn extra points for only one option below.

**Extra Credit option 1:** Perform exercise “Using the Coin Class” (chapter 6 of lab book) – reuse the Coin class and do not include Coin.java.

**Extra Credit option 2:** Modify exercise 4 so two players can play at the same time and the game only stops when both players quit the game. Sample output using nextRandom method:

Author: [Your Name]

Welcome to a simple version of roulette game.  
You can place a bet on black, red, or a number.  
A color bet is paid 2 the bet amount.  
A number bet is paid 35 the bet amount.  
You can bet on a number from 1 to 36.  
Gamble responsibly. Have fun and good luck!

Money available for Jane: 100

Betting Options:

1. Bet on black (even numbers)
2. Bet on red (odd numbers)
3. Bet on a number between 1 and 36

Enter a bet option, Jane (1, 2, or 3): 1

You chose option 1

How much to bet: 5

You chose to bet \$5 on Black color.

Money available for John: 100

Betting Options:

1. Bet on black (even numbers)
2. Bet on red (odd numbers)
3. Bet on a number between 1 and 36

Enter a bet option, John (1, 2, or 3): 2

You chose option 2

How much to bet: 15

You chose to bet \$15 on Red color.

Spinning ...

Current number: 20, color: Black

Jane won 10.

John lost this round.

Play again, Jane? [y/n] y

Money available for Jane: 105

Betting Options:

1. Bet on black (even numbers)
2. Bet on red (odd numbers)
3. Bet on a number between 1 and 36

Enter a bet option, Jane (1, 2, or 3): 3

You chose option 3

Enter a number: 39

Invalid number (must be between 1 and 36).

Enter a number: 5

How much to bet: 2

You chose to bet \$2 on number 5.

Play again, John? [y/n] y

Money available for John: 85

Betting Options:

1. Bet on black (even numbers)
2. Bet on red (odd numbers)

3. Bet on a number between 1 and 36

Enter a bet option, John (1, 2, or 3): 1  
You chose option 1  
How much to bet: 10  
You chose to bet \$10 on Black color.

Spinning ...  
Current number: 4, color: Red

Jane won 70.  
John lost this round.

Play again, Jane? [y/n] y

Money available for Jane: 173  
Betting Options:  
1. Bet on black (even numbers)  
2. Bet on red (odd numbers)  
3. Bet on a number between 1 and 36

Enter a bet option, Jane (1, 2, or 3): 2  
You chose option 2  
How much to bet: 0  
Invalid amount (must be at least 1).  
How much to bet: 10  
You chose to bet \$10 on Red color.

Play again, John? [y/n] n

Spinning ...  
Current number: 0, color: Green

Jane lost this round.  
Play again, Jane? [y/n] n

Jane won 63 for this game.  
John lost 25 for this game.  
Game over! Thanks for playing.

**Fill out and turn in the PA submission file for this assignment (save as PDF format).**

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