

Student Number: x23285508
Module Name: Software Development (HDSDEV_JAN24)
Week 5 Lab Submission

File - /Users/seanwelch/programming/labs/week5lab/makefile

```
1 // to run app use build command and then in terminal run make run file=FileName
2
3 build:
4     @javac -d target src/*.java
5
6 run:
7     @java -cp target $(file)
```

File - /Users/seanwelch/programming/labs/week5lab/src/LeapYear.java

```
1  public class LeapYear {
2      private int inputYear;
3      private boolean isLeapYear;
4
5      public int getInputYear(){
6          return inputYear;
7      }
8
9      public boolean getLeapYear(){
10         return isLeapYear;
11     }
12
13     public void setInputYear(int inputYear){
14         if (inputYear > 0 && inputYear < 1000000) {
15             this.inputYear = inputYear;
16             setLeapYear();
17         } else {
18             System.out.println("input must be greater than 0 or less than one million");
19         }
20     }
21
22     public void setLeapYear(){
23         isLeapYear = (inputYear % 4 == 0 && (inputYear % 100 != 0 || inputYear % 400 == 0));
24     }
25 }
```

File - /Users/seanwelch/programming/labs/week5lab/src/LeapYearApp.java

```
1 import java.util.Scanner;
2 import java.util.InputMismatchException;
3
4 public class LeapYearApp {
5     public static void main(String[] args) {
6         LeapYear leapYear = new LeapYear();
7
8         // Instructor note: used try catch block to avoid input errors
9         // also this syntax avoids the need to close scanner in finally block
10        try (Scanner scanner = new Scanner(System.in)) {
11            System.out.println("Enter a year to check if it is a leap year: ");
12            int userInput = scanner.nextInt();
13
14            leapYear.setInputYear(userInput);
15
16            if (leapYear.getLeapYear()) {
17                System.out.println(userInput + " is a leap year!");
18            } else {
19                System.out.println(userInput + " is not a leap year!");
20            }
21        } catch (InputMismatchException err) {
22            System.out.println("Please enter a valid integer.");
23        }
24    }
25 }
```

File - /Users/seanwelch/programming/labs/week5lab/src/RockPaperScissors.java

```
1 public class RockPaperScissors {
2
3     private final UserOptions generatedOption;
4
5     public RockPaperScissors() {
6         int option = (int) (Math.random() * 3) + 1;
7         this.generatedOption = UserOptions.getOption(option);
8     }
9
10    public enum UserOptions {
11        ROCK(1), PAPER(2), SCISSORS(3);
12
13        private final int value;
14
15        UserOptions(int value){
16            this.value = value;
17        }
18
19        public int getValue(){
20            return value;
21        }
22
23        public static UserOptions getOption(int value) {
24            for (UserOptions option : UserOptions.values()) {
25                if (option.getValue() == value) return option;
26            }
27            throw new IllegalArgumentException("Invalid option: " + value + "please choose from either 1, 2 or 3");
28        }
29    }
30
31    public String checkResult(int userInput) {
32        String resultMessage;
33        UserOptions userOption = UserOptions.getOption(userInput);
34
35        String userChoice = userOption.toString();
36        String computerChoice = generatedOption.toString();
37
38        if (userOption == generatedOption) {
39            return String.format("You chose %s, the Computer chose %s. ", userChoice, computerChoice)
40        } else {
41
42            boolean result = switch (userOption) {
43                case ROCK -> generatedOption == UserOptions.SCISSORS;
44                case PAPER -> generatedOption == UserOptions.ROCK;
45                case SCISSORS -> generatedOption == UserOptions.PAPER;
46                default -> throw new IllegalStateException("Unexpected value: " + userOption);
47            };
48
49            resultMessage = String.format("You chose %s, the Computer chose %s. ", userChoice, computerChoice)
50                + (result ? "You Win!" : "You Lose! Try Again");
51        }
52
53        return resultMessage;
54    }
55
56    public String play(int userInput) {
57        try {
58            return checkResult(userInput);
59        } catch (IllegalArgumentException err) {
60            return err.getMessage();
61        }
62    }
63 }
```

File - /Users/seanwelch/programming/labs/week5lab/src/RockPaperScissorsApp.java

```
1 import java.util.InputMismatchException;
2 import java.util.Scanner;
3
4 public class RockPaperScissorsApp {
5     public static void main(String[] args) {
6         RockPaperScissors rockPaperScissors = new RockPaperScissors();
7
8         try (Scanner scanner = new Scanner(System.in)) {
9             for (int attempt = 1; attempt <= 3; attempt++) {
10                 System.out.println("Enter your choice in number format: Rock(1), Paper(2), Scissors(3)");
11                 int userInput = scanner.nextInt();
12
13                 if (userInput < 1 || userInput > 3) {
14                     System.out.println("Invalid choice. Please select from 1 (Rock), 2 (Paper), or 3 (Scissors).");
15                     attempt--;
16                     continue;
17                 }
18
19                 String result = rockPaperScissors.play(userInput);
20                 System.out.println(result);
21
22                 if (result.contains("You Win!")) {
23                     System.out.println("Congratulations, you win!");
24                     break;
25                 }
26             }
27         } catch (InputMismatchException err) {
28             System.out.println("Please provide a valid integer from the options :{1, 2, 3}");
29         }
30     }
31 }
32 }
```