

Isaac Ray Shoebottom

CS 1073 (FR02A)

Assignment 6

3429069

Section A

Source Code (LeapYearCheck.java):

```
/**
 *This class takes a given date and tells the user if it is a leap year
 * @author Isaac Shoebottom (3429069)
 */
public class LeapYearCheck {

    public static void main(String[] args) {

        java.util.Scanner scanner = new java.util.Scanner(System.in);
        long year;
        do {
            System.out.print("Please enter a year: ");
            year = scanner.nextLong();
            if (year < 1582) {
                System.out.println("Invalid Year, you cannot enter a year
prior to 1582");
            }
        }
        while (year < 1582);

        if ((year % 4 == 0) && (year % 100 != 0) || (year % 400 == 0)) {
            System.out.println("This is a leap year");
        }
        else {
            System.out.println("This is not a leap year.");
        }
    }
}
```

Section B

Sample Output:

1.

```
"c:\program files\zulu\zulu-8\bin\java.exe" ...  
Please enter a year: 1400  
Invalid Year, you cannot enter a year prior to 1582  
Please enter a year:
```

2.

```
"c:\program files\zulu\zulu-8\bin\java.exe" ...  
Please enter a year: 1782  
This is not a leap year.  
  
Process finished with exit code 0
```

Section C

Source Code (MakingChange.java):

```
/**
 * This class returns the amount of change the user would be given provided
 they give the amount they paid and the price of their items
 * @author Isaac Shoebottom (3429069)
 */

public class MakingChange {
    public static void main(String[] args){
        java.util.Scanner scanner = new java.util.Scanner(System.in);
        double totalPrice;
        double amountPaid;
        long changeTotal;

        do {
            do {
                System.out.print("Please enter the total price: ");
                totalPrice = scanner.nextDouble();
                if (totalPrice <= 0) {
                    System.out.println("Invalid input. Please enter a
positive number");
                }
            }
            while (totalPrice <= 0);

            do {
                System.out.print("Please enter the amount paid: ");
                amountPaid = scanner.nextDouble();
                if (amountPaid <= 0) {
                    System.out.println("Invalid input. Please enter a
positive number");
                }
            }
        }
    }
}
```

```
    }
    while (amountPaid < 0);
    changeTotal = (long)(amountPaid*100) - (long)(totalPrice*100);
    if (changeTotal < 0) {
        System.out.println("Invalid inputs. The amount of change
given must be at least zero \n");
    }
}
while (changeTotal < 0);

long twenties = (changeTotal/2000);
changeTotal -= (twenties * 2000);
long tens = (changeTotal/1000);
changeTotal -= (tens * 1000);
long fives = (changeTotal/500);
changeTotal -= (fives * 500);
long toonies = (changeTotal/200);
changeTotal -= (toonies * 200);
long loonies = (changeTotal/100);
changeTotal -= (loonies * 100);
long quarters = (changeTotal/25);
changeTotal -= (quarters * 25);
long dimes = (changeTotal/10);
changeTotal -= (dimes * 10);
long nickels = (changeTotal/5);
changeTotal -= (nickels * 5);
long pennies = changeTotal;

System.out.println(
    "\n" +
    "Here is the change that they are due:\n" +
```

```
"20$ bills: " + twenties + "\n" +  
"10$ bills: " + tens + "\n" +  
"5$ bills: " + fives + "\n" +  
"Toonies: " + toonies + "\n" +  
"Loonies: " + loonies + "\n" +  
"Quarters: " + quarters + "\n" +  
"Dimes: " + dimes + "\n" +  
"Nickels: " + nickels + "\n" +  
"Pennies: " + pennies
```

```
);
```

```
}
```

```
}
```

Section D

Sample Output:

```
"c:\program files\zulu\zulu-8\bin\java.exe" ...  
Please enter the total price: -56  
Invalid input. Please enter a positive number  
Please enter the total price: 56  
Please enter the amount paid: -78  
Invalid input. Please enter a positive number  
Please enter the amount paid: 45  
Invalid inputs. The amount of change given must be at least zero  
  
Please enter the total price: 45  
Please enter the amount paid: 72  
  
Here is the change that they are due:  
20$ bills: 1  
10$ bills: 0  
5$ bills: 1  
Toonies: 1  
Loonies: 0  
Quarters: 0  
Dimes: 0  
Nickels: 0  
Pennies: 0  
  
Process finished with exit code 0
```