Credit Name: CSE 3120 Object-Oriented Programming 1
Assignment Name: DigitExtractor

How has your program changed from planning to coding to now? Please explain?

I began by creating a class Num to use to create objects in my main method. This will be used to store and calculate place values in the program.

```
//Num object to calculate place values in DigitExtractor
public class Num {
```

Initalized private variables in Num class; to be used only inside class.

```
//Initialize private variables
private int number, ones, tens, hundreds;
```

Created a constructor to set all default value amounts as 0. PlaceValue method is used to calculate default place values.

```
public Num() { //default constructor
    number = 0; //Initialize variable as 0
    placeValues();
}
```

Created a contructor overloader to create a object with existing perameters (number used for calculations). Sets all variables equal to perameters upon creation of object.

```
public Num(int newNum) {
//overload the default constructor method
    number = newNum;
    placeValues();
}
```

Created a method to calculate the place value of the given number. Sets variables hundreds, tens , and ones, equal to the calculated place values.

```
//Calculate place values
public void placeValues() {
    hundreds = number / 100;
    tens = (number % 100)/ 10;
    ones = (number % 10);
}
```

Created 4 methods to return the value of each correspondent place value back to the main method. Methods return a int value since they will all be whole numbers.

```
//Accesser methods:
public int getHundreds() { //hundreds place number
    return hundreds;
}

public int getTens() { //tens place number
    return tens;
}


public int getOnes() { // ones place number
    return ones;
}

public int getWhole() { //whole number
    return number;
}
```

In main method, import scanner to prepare for user input.

```
//Preparing for user input
Scanner input = new Scanner(System.in);
```

Initalized variables used in main method. (number: int (whole number), string: choice, cont: boolean (used for switch statement)

```
//Initialize variables
int number;
String choice;
boolean cont = true;
```

Prompted the user to enter a integer number, and recorded user input in variable number.

```
//Prompt the user for a number + record user input
System.out.println("Please enter an integer: ");
number = input.nextInt();
```

Create a new object num1 with the parameters as the variable which stores the integer data (number) entered by the user.

```
//create num object
Num num1 = new Num(number);
```

While the variable cont remains true, reapeat the processes below:

```
//While cont is equal to true:
while (cont == true) {
```

Display menu choices to user, and prompt them for choice; record user input as choice variable string.

```
//Display choices to user
System.out.println("");
System.out.println("show (W)hole place number.");
System.out.println("show (O)nes place number.");
System.out.println("show (T)ens palce number");
System.out.println("show (H)undreds place number");
System.out.println("(Q)uit program");
System.out.println("");

//Prompt user for choice and record user input
System.out.print("Please enter your choice to continue: ");
choice = input.next();
```

Using a switch statement, process the correspondent choice choosen by user.

```
//Process choice chosen by user with corresponding case:
switch(choice.toLowerCase()) {
```

If user input is equal to "w", "o", "t", or "h", display the place digit of the corresponding place by retreving value from object num1 method.

```
//Display whole number
case "w": System.out.println("The whole number is: " + num1.getWhole());break;

//Display number in ones place
case "o": System.out.println("The ones place digit is: " + num1.getOnes());break;

//Display number in tens place
case "t": System.out.println("The tens place digit is: " + num1.getTens());break;

//Display number in hundreds place
case "h": System.out.println("The hundreds place digit is: " + num1.getHundreds());break;
```

if user choice = "q", set cont as false to end while loop, effectivly terminating the program.

```
//End program; set cont as false; ending the while loop.
case "q": System.out.println("Thank you for using DigitExtractor application.");
          System.out.println("Have a great day!");
          cont = false; break;
```

(Error handling) if user enters anything other than above choices, inform user of error, and continue loop.

```
//Default case; inform user of error.
default: System.out.println("Invalid. Please enter a valid choice"); break;
```