Assignment 3 – Menu Driven Application
See Canvas for due date
50 Points

Design a program called IntFun.java which reads in a *non-negative* integer from the user. The user will then be prompted with a menu of choices (this menu should be repetitively displayed until the user chooses to quit): ***You must implement #1 and #5 and TWO of #2, #3,and #4. (SEE EXTRA CREDIT)***

Your menu will include these choices (stub out the one you don't implement.)

1. Enter a new number
2. Print the number of odd digits, even digits and zeros in the integer
3. Print the prime numbers between 2 and the integer
4. Print the sum of the digits of the integer
5. Quit the program

PROGRAM PARTICULARS:

- When the program starts up, ask the user for a non-negative integer. After the user enters the non-negative integer, display the above menu. Remember the user can choose to do #2, #3, and #4 on the same number. Meaning, once you have the number from the user do not make the user enter a new number each time. The user can keep the same number until the user selects option 1 (see example output below.)
- There must be error checking on the input integer: if it is negative, the program will print an error message and re-prompt. This process will continue until valid input is entered. You may assume an integer of some form will be entered by the user.

- There must be error checking on the menu choice entered: if the user enters a choice not on the menu, the program will print an error message, re-display the menu and re-prompt. This process will continue until valid input is entered.
- No string variables are allowed.
- No built-in methods for integer manipulation are allowed. You may use Math.pow( ) if you feel it is necessary.
- You may assume that no integer entered will be greater than the maximum integer size for type **int**.

HINTS:

- First, solve the primary problems one at a time, testing each one separately. (Make sure that your algorithm works for single-digit numbers - including zero!). Design things modularly.
- Solve the input and error checking problems once the others are solved and tested.

EXTRA CREDIT:

10 points: implement all three! (NOTE: if you implement the extra credit, be sure and document that you are doing so -- if you do not, you will not be given credit for it!)

TURN IN: (via the Canvas system)

A zip file - hopefully you understand the naming scheme. Remember the title in digital drop box is the same as the file name.

This jar file will contain:

- `IntFun.java`
- `IntFunout.txt`

GET STARTED ASAP

SAMPLE OUTPUT:

Welcome to Integer Fun.
Please enter a non-negative integer --> -12

I am sorry that is not a non-negative integer.
Please enter a non-negative integer --> 120

Please select from the following menu choices.

1. Enter a new number
2. Print the number of odd, even and zero digits in the integer
3. Print the prime numbers between 2 and the integer
4. Print the sum of the digits of the integer
5. Quit the program

Choice --> -6

I am sorry that is an invalid menu choice.
Please try again

Please select from the following menu choices.

1. Enter a new number
2. Print the number of odd, even and zeros in the integer
3. Print the prime numbers between 2 and the integer
4. Print the sum of the digits of the integer
5. Quit the program

Choice --> 2

Your results are:
odd - 1
even - 1
zero(s) - 1

Please select from the following menu choices.

1. Enter a new number
2. Print the number of odd, even and zeros in the integer

3. Print the prime numbers between 2 and the integer
4. Print the sum of the digits of the integer
5. Quit the program

Choice --> 4

The sum of the digits in the number 120 is 3

Please select from the following menu choices.

1. Enter a new number
2. Print the number of odd, even and zeros in the integer
3. Print the prime numbers between 2 and the integer
4. Print the sum of the digits of the integer
5. Quit the program

Choice --> 1

Please enter a non-negative integer --> 10

Please select from the following menu choices.

1. Enter a new number
2. Print the number of odd, even and zeros in the integer
3. Print the prime numbers between 2 and the integer
4. Print the sum of the digits of the integer
5. Quit the program

Choice --> 2

Your results are:
odd - 1
even - 0
zero(s) - 1

Please select from the following menu choices.

1. Enter a new number
2. Print the number of odd, even and zeros in the integer
3. Print the prime numbers between 2 and the integer

4. Print the sum of the digits of the integer
5. Quit the program

Choice --> 5

Thank you and have a nice day