MATH 4332

Assignment# 7

Due : 10/20/2023, Friday, before 11:59pm Term :Fall 2023

Important Note: Please use only materials covered so far to solve your problems. You will be given zero if the materials used are not yet covered.

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1. Write a program that allows the user to enter any number of test scores. The user indicates they are done by entering in a negative number. Print how many of the scores are `A's` (`90` or above). Also print out the average.

2. Write a program to determine how many zeroes `1000!` ends with.

3. Use the following two lists and the `format` method to create a list of card names in the format card value of suit name (for example, `'Two of Clubs'`).

```
suits = ['Hearts', 'Diamonds', 'Clubs', 'Spades']
values = ['One', 'Two', 'Three', 'Four', 'Five', 'Six', 'Seven',
          'Eight', 'Nine', 'Ten', 'Jack', 'Queen', 'King', 'Ace']
```

4. Write a program that creates the list `[1,11,111,1111,...,111...1]`, where the entries have an ever increasing number of ones, with the last entry having `100` ones.

5. Write a program that finds all pairs of six-digit palindromic numbers that are less than `20` apart. One such pair is `199991` and `200002`.

6. The number `99` has the property that if we multiply its digits together and then add the sum of its digits to that,we get back to `99`. That is, `(9×9)+(9+9)=99`. Write a program to find all of the numbers less than `10000` with this property. (There are only nine of them.)

7. Write a program that finds all integer solutions to Pell's equation $x^2 - 2y^2 = 1$,where x and y are between 1 and 100.

8. Write a program to determine how many of the numbers between 1 and 10000 contain the digit 3.