**Max Time: 3 hours**

**Instructions:**

* Indent your code properly.
* Use meaningful variable names. Follow the naming conventions.
* Use meaningful prompt lines/labels for all input/output that is done by your programs.
* You are not allowed to discuss your problems with your fellows. If you feel any problem in understanding then you may ask your teacher or TA.

**Task: 1**

The day of year is a number between 1 and 365 (January 1 is day 1) for a common (i.e. non leap) year. Today is 10th April which is day number 100. Write a Program that asks the user to enter month (in numeric) and date and displays the corresponding day number.

**Sample Run 1:**

Enter Month: **2**

Enter Date: **2**

The day number for 2-2 is 33.

**Sample Run 2:**

Enter Month: **3**

Enter Date: **1**

The day number for 1-3 is 60.

**Task: 2**

Extend the Task 0601 in way that now it finds the day (i.e. Monday, Tuesday etc.) against the date entered by the user. Suppose it was Tuesday on January 1.

**Sample Run 1:**

Enter Month: **2**

Enter Date: **2**

The day on 2-2 is Saturday.

**Sample Run 2:**

Enter Month: **3**

Enter Date: **1**

The day on 1-3 is Friday.

**Task: 3**

Write a Program that takes your average obtained mark of a course and then displays your GPA according to the following Grading System. Also mention that whether the student is on probation or not. [Hint: Use ***if-else*** structure]

|  |  |
| --- | --- |
| **GRADING SYSTEM** | |
| **For Fall 2008 batch** | |
| **AVERAGE MARKS** | **GRADE POINTS** |
| 85-100 | 4.00 |
| 80-84 | 3.70 |
| 75-79 | 3.30 |
| 70-74 | 3.00 |
| 65-69 | 2.70 |
| 61-64 | 2.30 |
| 58-60 | 2.00 |
| 55-57 | 1.70 |
| 50-54 | 1.00 |
| Below 50 | 0.00 |
| A student attains **Probation Status** if his/her CGPA becomes **1.70** or morebut less than **2.00.** | |

**Task: 4**

Write a program that takes an integer number from user and shows the next 5 and then previous 5 numbers on the screen.

**Task: 5**

Write a program that calculates the sum of real numbers. Your program should keep taking values and adding them unless user presses -999. Your program should display the sum before the program finishes.

**Task: 6**

Write a program that should take several integer numbers from the user, for each number it should check whether it is odd or even and display “Even” or “Odd” accordingly. Your program should keep taking numbers and displaying messages unless user presses 0.

**Task: 7**

Write a program that take an integer number from user and print whether every digit of that number is odd or even.

For example if user enter the number 5784696 then output should be as:

Odd numbers: 5 7 9

Even numbers: 8466

Total odd number: 3

Total even number: 4

**Note:** use increment operator to count the total odd and total even number.

***Hint:* You can pull apart a number into its digits using / 10 and % 10**

**Task: 8**

The program must prompt the user to enter a positive number that must be **at-least 2** digit and the reverse of this number must be the mirror image of the number. **e.g. 12321…. And display “THE NUMBER IS VALID”** if the user enters correct number otherwise display **“THE NUMBER IS NOT VALID”.**