PROGRAM 6

QUESTION:

Create a class MagicNumber having following specification.

Class Name: MagicNumber

Data Methods:

* int n – to store the number

Member methods:

MagicNumber (int nn) – to initialize n with nn.

* int sumOfDigits – to return the sum of digits of the given number.
* void check() – to check if sum of digits of the given number is equal to 1 and display the print statement accordingly.

Write a main method to create the object of the class and call the above methods properly.

ALGORITHM

1. Start
2. Define a class called MagicNumber.
3. Declare an instance variable 'n' to store the input number.
4. Create a constructor 'MagicNumber (int nn)' to initialize 'n' with the provided value.

Algorithm for the `sumOfDigits` method:

* 1. Function `sumOfDigits` with parameter `number`.
  2. If `number` is less than 10:
     1. Return `number`.

1. Else:
   1. Initialize `sum` as 0.
   2. While `number` is not 0:
2. Add the last digit of `number` to `sum`.
3. Update `number` by removing the last digit.
4. Return a recursive call to `sumOfDigits` with `sum` as the argument.
5. End.

Algorithm for the `check` method:

* 1. Function `check`.
  2. Calculate the sum of digits by calling the `sumOfDigits` method with `n` as an argument.
  3. If the calculated sum of digits is equal to 1:
     1. Display "The given number is a Magic Number".

1. Else:
   * 1. Display "The given number is not a Magic Number".
2. End.

Algorithm for the `main` method:

1. Start.
2. Initialize a Scanner object `sc` to read input from the user.
3. Display the message: "Enter a number".
4. Read an integer input `num` from the user using the Scanner.
5. Create an instance of the `MagicNumber` class named `obj`, passing `num` as an argument to the constructor.
6. Call the `check` method on the `obj` instance to determine if the entered number is a Magic Number or not.
7. End.

**VARIABLE DESCRIPTION TABLE**

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Description** | **Data Type** |
|  |  |  |
| n | int | Instance variable to |
|  |  | store the input |
|  |  | number |
|  |  |  |
| nn | int | Parameter for the |
|  |  | constructor |
|  |  |  |
| number | int | Parameter for the |
|  |  | `sumOfDigits` |
|  |  | method |
|  |  |  |
| sum | int | Variable to |
|  |  | accumulate the sum |
|  |  | of digits |
|  |  |  |
| result | int | Stores the result of |
|  |  | the sum of digits |
|  |  |  |
| sc | Scanner | Scanner object to |
|  |  | read user input |
|  |  |  |
| num | int | Stores the user input |
|  |  | number |
|  |  |  |
| obj | MagicNumber | Instance of the |
|  |  | `MagicNumber` class |