**Question:**

A happy number is a number in which the eventual sum of the square digits of the number is equal to 1.

Class name: Happy

Data member:

int n: to store the number.

Member functions:

Happy(): constructor to assign n.

Void getnum (int nn): ton assign the parameter values to the number n=nn.

Int sum\_sq\_digits (int x): returns the sum of the square of the digits of the number x , using recursive.

Void isHappy (): check if the given number is a happy number by calling the function sum\_sq\_digits and display an appropriate number.

Specify the class Happy giving details of the constructor(int), int

sum\_sq\_digits (int) & void isHappy().Define the main() function to create on object & call the methods to check for Happy number.

**Algorithm:**

1. **Start**
2. Define a class Happy with one instance variable n.
3. Define a constructor for the class that sets n to 0.
4. Define a method getnum that takes an integer nn as input and sets n to nn.
5. Define a method sum\_sq\_digits that takes an integer x as input:
   * 1. If x is 0, return 0.
     2. Otherwise, calculate the last digit of x, square it, and add the result to the result of sum\_sq\_digits called with x divided by 10.
6. Define a method isHappy:
   * 1. Initialize result to n. While result is not 1 and result is not 4, set result to the result of sum\_sq\_digits called with result.
     2. If result is 1, print that n is a happy number.
     3. Otherwise, print that n is not a happy number.
7. In the main method:
   * 1. Create a Scanner object sc.
     2. Prompt the user to enter a number.
     3. Read an integer x from the user.
     4. Create a Happy object obj.
     5. Call the getnum method of obj with x.
     6. Call the isHappy method of obj.
     7. Close the scanner.
8. **End**

**Variable Description Table**

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| --- | --- | --- |
| **Variable name** | **Variable Type** | **Variable Description** |
| n | Integer | The number input by the user. |
| rev | Integer | The reversed number. |
| f | Integer | The divisor, initialized to 2 but not used in the code. |
| x | Integer | The number input by the user in the main method. |
| obj | Class | An instance of the Happy class. |
| sc | Scanner | A Scanner object used to read input from the user. |