





















**MCS 173 PYTHON PROGRAMMING CAT 1**  
**DATE:26/11/2020** **TIME:2-4PM**  
**Maximum Marks:20**




The **Mayan civilisation** had settled in the region of Central America from about 2000 BCE. The importance of astronomy and **calendar calculations in Mayan society** required mathematics and the Maya constructed quite early a very sophisticated number system, **Vigesimal - Base 20 Number System**. The Mayan and other Mesoamerican cultures used a vigesimal number system based on **base 20**, and positional: units, tens, hundreds (and so on) were read as descendant progressive powers of 20, instead of 10 like we do with our decimal system.

The symbols and Mayan number chart

				
0	1	2	3	4
				
5	6	7	8	9
				
10	11	12	13	14
				
15	16	17	18	19

For example

**815 is equivalent to  $(2 \times 20^2) + (0 \times 20^1) + (15 \times 20^0)$**

	$2 \times 400 = 800$	$= 815$
	$0 \times 20 = 0$	
	$15 \times 1 = 15$	

Converting 3575 from base 10 to base 20.

$20^0 = 1$   
 $20^1 = 20$   
 $20^2 = 400$   
 $20^3 = 8000$

$3575 \div 400 = 8 \text{ R } 375$   
 $375 \div 20 = 18 \text{ R } 15$   
 $15 \div 1 = 15$

$$\begin{array}{r} 8 \\ 400 \overline{) 3575} \\ \underline{3200} \phantom{0} \\ 375 \\ 20 \overline{) 375} \\ \underline{40} \phantom{0} \\ 175 \\ \underline{160} \phantom{0} \\ 15 \end{array}$$

$8, 18, 15_{20}$

You are fond of numerical systems and Mayan number systems is something you admire. Write a python script which accepts a positive integer converts it into Mayan numerical system.


**Use the following symbols**

# for number 0



For

● use o (small case o)

For  use - (single hyphen)

Example when input is 815 output is a list containing the symbols ["o o", "- - -"]

If input is 37 then output is the list ["o", "o o - - -"].

Test your program with following input

1. 4285
2. Your registration number
3. Number generated by addition of your birth year and date(for ex 1977+22=1999)

**Instructions :**

1. Upload your python script along with screenshot for all the three inputs.
2. Mention your registration number, birth year and date as a comment
3. Keep your video on throughout the examination
4. You are bound by the code of ethics and discipline ,do adhere to it.
5. For any clarification contact your evaluator.

**Rubrics**

3 test inputs 3 marks each 3x3=9marks

Validation of input (ie it is a valid positive integer ) – 2marks

Code -appropriate use of concepts – 7 marks

Programming standards – 2 marks