

Assignment 3 (CS141, 2021-2022)

We write numbers usually in base 10. Any number n can be written as $n = (a_l a_{l-1} \dots a_2 a_1 a_0)_{10} = a_l * 10^l + a_{l-1} * 10^{l-1} + \dots + a_2 * 10^2 + a_1 * 10 + a_0$, where $a_0, a_1, \dots, a_l \in \{0, 1, \dots, 9\}$. For example when we write a number 1015 in base 10, we interpret it as $1 * 10^3 + 0 * 10^2 + 1 * 10^1 + 5 * 10^0 = 1015$. Suppose you travel to a world where instead of base 10, numbers are represented in base 9. Then, we need to write a program that given a number in base 10 converts the number into base 9 and vice versa. Suppose we have some number $(215)_9$. In base 10, it would be $2 * 9^2 + 1 * 9^1 + 5 * 9^0 = 176$. So, this part is pretty easy. You will write a program to convert a positive number in base 10 into a number in base 9. In fact we can do something more general to ensure that you fit in any such external world.

In this assignment you will take a positive integer number as input, and write the number in base i , where i is between 2 to 9, and is given as input by the user. For example, if the user enters the number 99 and base as 7, you should output 201 as $99 = 2 * 7^2 + 0 * 7^1 + 1 * 7^0$. You will print the number in base i .

Name your submission as **Assgn3-YourRollNo.py** and upload the **.py** file in the google classroom.