

You are given 3 sets of questions, in which the first two (1 & 2) questions are important and the third (3rd) question is OPTIONAL/Bonus.

This should hardly take 2-3 hours maximum.

1. Given a string of MAC address and a dictionary (mapper), replace the key item from MAC with the value of a dictionary.

```
mac = "EC:B0:8T:E4"
mapper = {
    "E": 0,
    "T": 0
}
```

Expected Output: "0C:B0:80:04"

2. Write a Program
 - a. To check if the year is a Leap year or not

Expected Output:

```
2017 is not a leap year
1900 is a not leap year
2012 is a leap year
2000 is a leap year
```

b. check whether a number is Prime or not

Input: $n = 11$

Output: true

Input: $n = 15$

Output: false

Input: $n = 1$

Output: false

3. Bonus Question (Optional):

You are given an array of prices where $\text{prices}[i]$ is the price of a given stock on an i th day. You want to maximize your profit by choosing a single day to buy one stock and choosing a different day in the future to sell that stock.

Return the maximum profit you can achieve from this transaction. If you cannot achieve any profit, return 0.

Example 1:

Input: $\text{prices} = [7, 1, 5, 3, 6, 4]$

Output = 5

Explanation: Buy on day 2 (price = 1) and sell on day 5 (price = 6), profit $\Rightarrow 6 - 1 = 5$.

Note that buying on day 2 and selling on day 1 is not allowed because you must buy before sell.