

Detect a Prime Number Question) A prime number is a whole number greater than 1, whose only two whole-number factors are 1 and itself. The first few prime numbers are 2, 3, 5, 7, 11, 13, 17, 19, 23, and 29. Write a function, 'checkIfPrime()', that will ask the user for a number, then checks whether the number is a prime number or not. Use a 'for' or 'while' loop.

Detect an Even Number) Write a function, 'checkIfEven()', that will keep asking the user for values, each time the user inputs a value, Python should display either 'The number is even' or 'The number is odd' according to the number provided. As soon as the user inputs a negative values (say -1), the program should end. Use a 'while' loop for this question.

Question 03) Assume we are dealing with 8 bit numbers for this problem. Complete the following tables to practice encoding decimal values into unsigned and sign-magnitude binary representations. The first table is unsigned and the second table is sign-magnitude. The first row of each column has been filled out for you. If a decimal number can't be encoded into binary and hexadecimal with the given scheme, write "n/a"

Unsigned:

Decimal	Binary
10	0b0000 1010
	0b1111 0000
250	
	0b1111 1111
-35	
128	
	0b0110 1001

Sign-magnitude:

Decimal	Binary
-10	0b1000 01010
	0b1111 0000
250	
	0b1111 1111
-35	
128	
	0b0110 1001

Question 04) Decrypt a message. Given you have a message that has been encrypted by shifting the ASCII of each letter (-/+25) then converting it back to actual characters. Write code that will find the correct shift and decrypt the message, assuming that each message has at least one of the following words: "the", "not", and "and". Here are two samples of encrypted messages:

1)

```
M[h[@e^ddo#Yec[#bWj[b_[$M[b_l[_dj^[Yeic_YXeedZeYai$M[[c[h]
[Z\hecc_YheX[iWdZckYa$7f[iWh[ekhYeki_di$Ekjh^ek]^jiWdZ\
[[b_d]iWh[dej\kbbokdZ[hekhemdYedjheb$J^[h[cWoX[ckY^icWhj[hWdZl[hoZ_\
[h[djX[_d]i[bi[m^h[$7dZedjefe\Wbbj^_i"m[h[cWa_d]Wc[iie\ekhfbWd[jWdZX[Ye
c_d]WZWd][hjeekhi[bl[i$
```

2)

```
=djgjbndnonjao`io\gf\jpooc`" `^jgjb"ja\ijmb\idnh5oc`o\gg`noj\fdioc`ajm`nod
noc`o\gg`noijoejno]^`pn`dobm`ramjhoc`c\_m\_d`no`^jmi6dodnoc`o\gg`no\gn
j]^`pn`ijjoc`mom`n]gj^f`_donnpigdbco'oc`njdg\mjpi\_dor\n_`k\i\_md^c'ij
m\]]do^c`r`_ocmjpbcdon]
\mf\n\n\kgdib'\i\_ijgph]^me\^f^podo\_jri]^ajm`doh\opm`_)
```