The chr() and ord() Functions

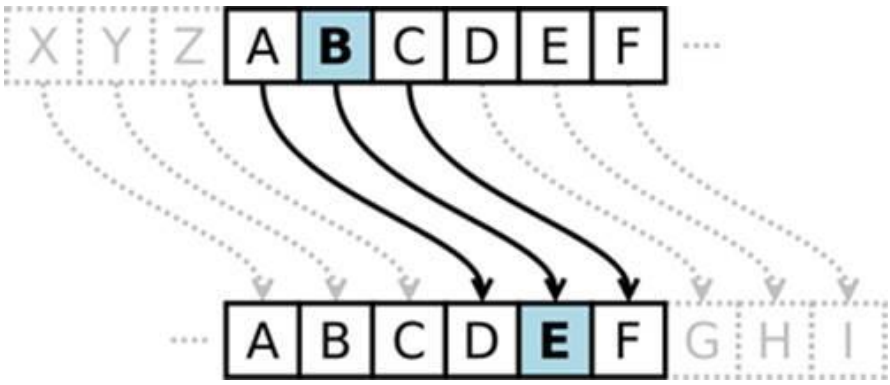
We can use `ord()` function (short for “ordinal”) and `chr()` function (short for “character”) to convert between character and character codes. Try entering the following into the interactive shell:

```
>>> chr(65)
>>> ord('A')
>>> chr(65+8)
>>> chr(52)
>>> chr(ord('F'))
>>> ord(chr(68))
```

Task – Caesar Cipher program

The Caesar Cipher was one of the earliest ciphers ever invented. In this cipher, you encrypt a message by taking each letter in the message and replacing it with a “shifted” letter. The number of spaces you shift is the key in the Caesar Cipher.

If you shift the letter A by one space, you get the letter B. If you shift the letter A by two spaces, you get the letter C.



Shifting over letters by three spaces. Here, B becomes E

Write a program to implement the Caesar cipher encryption and decryption. Your program should allow the user to select between encryption and decryption modes. It should allow the user to enter a key (a number from 1 to 26) as well as the text to be encrypted/ decrypted. Depending on the mode selected, the program should either display plaintext or ciphertext.

Example output

```
Do you wish to encrypt or decrypt a message?
encrypt
Enter your message:
The sky above the port was the color of television, tuned to a dead channel.
Enter the key number (1-26)
13
Your translated text is:
Gur fxl nobir gur cbeg jnf gur pbybe bs gryrivfvba, gharq gb n qrnq punaary.
```

```
Do you wish to encrypt or decrypt a message?
decrypt
Enter your message:
Gur fxl nobir gur cbeg jnf gur pbybe bs gryrivfvba, gharq gb n qrnq punaary.
Enter the key number (1-26)
13
Your translated text is:
The sky above the port was the color of television, tuned to a dead channel.
```

Extension task

Brute force is the technique of trying every possible key until you find the correct one. Because there are only 26 possible keys, it would be easy for a cryptanalyst to write a hacking program than decrypts with every possible key. Then they could look for the key that decrypts to plain English.

Your task is to add a brute force feature to the original program. Modify your program such that it will print every possible translation of the message (including the key number used in the translation)

Example output

```
Do you wish to encrypt or decrypt or brute force a message?
brute
Enter your message:
Lwcjba uig vwb jm xtmiaivb, jcb kmzbiqvbg qa ijaczl.
Your translated text is:
1 Kvbiaz thf uva il wslhzhua, iba jlyahpuaf pz hizbyk.
2 Juahzy sge tuz hk vrkgygtz, haz ikxzgotze oy ghyaxj.
3 Itzgyx rfd sty gj uqjfxfsy, gzy hjwyfnsyd nx fgxzwi.
4 Hsyfxw qec rsx fi tpiewerx, fyx givxemrxc mw efwyvh.
5 Grxewv pdb qrw eh sohdvdqw, exw fhuwdlqwb lv devxug.
6 Fqwdvu oca pqv dg rngcucpv, dwv egtvckpva ku cduwtf.
7 Epvcut nbz opu cf qmfbtbou, cvu dfsubjouz jt bctvse.
8 Doubts may not be pleasant, but certainty is absurd.
9 Cntasr lzx mns ad okdzrzms, ats bdqszhmsx hr zartqc.
10 Bmszrq kyw lmr zc njcyqylr, zsr acpryglrw gq yzqspb.
11 Alryqp jxv klq yb mibxpxkq, yrq zboqxfkqv fp xyproa.
12 Zkqxpo iwu jkp xa lhawowjp, xqp yanpwejpu eo wxoqnz.
13 Yjpwon hvt ijo wz kgzvnvio, wpo xzmovdiot dn vwnpmy.
14 Xiovnm gus hin vy jfyumuhn, von wylnuchns cm uvmolx.
15 Whnuml ftr ghm ux iextltgm, unm vxkmtbgmr bl tulnkw.
16 Vgmtlk esq fgl tw hdwsksfl, tml uwjlsaflq ak stkmjv.
17 Uflskj drp efk sv gcvrjrek, slk tvikrzekp zj rsjliu.
18 Tekrji cqo dej ru fbuqiqdj, rkj suhjqydjo yi qrikht.
19 Sdjqih bpn cdi qt eatphpci, qji rtgipxcin xh pqhjgs.
20 Rciphg aom bch ps dzsogobh, pih qsfhowbhm wg opgifr.
21 Qbhogf znl abg or cyrnfnag, ohg pregnvagl vf nofheq.
22 Pagnfe ymk zaf nq bxqmemzf, ngf oqdfmuzfk ue mnegdp.
23 Ozfmed xlj yze mp awpldlye, mfe npceltyej td lmdfco.
24 Nyeldc wki xyd lo zvokckxd, led mobdksxdi sc klcebn.
25 Mxdkcb vjh wxc kn yunjbjwc, kdc lnacjrwch rb jkbdam.
26 Lwcjba uig vwb jm xtmiaivb, jcb kmzbiqvbg qa ijaczl.
```