

Programming assignment 1.1

XOR encryption

Each character on a computer is assigned a unique code and the preferred standard is ASCII (American Standard Code for Information Interchange). For example, uppercase A = 65, asterisk (*) = 42, and lowercase k = 107.

A modern encryption method is to take a text file, convert the bytes to ASCII, then XOR each byte with a given value, taken from a secret key. The advantage with the XOR function is that using the same encryption key on the cipher text, restores the plain text; for example:
 $65 \text{ XOR } 42 = 107$, and $107 \text{ XOR } 42 = 65$.

Your task is to write two functions:

```
xor_encrypt(text, key)
xor_decrypt(secret_text, key)
```

encrypt will take a text like:

```
This is a secret message!
```

and a key like:

```
china
```

Then you have to XOR all the letters together as

```
This is a secret message!!
chinachinachinachinachinac
```

and return the resulting string.

decrypt has to take a secret message and xor it with a given key in the same manner.

```
print(xor_encrypt('01234', 'asde')) -> QBVVU
```

```
print(xor_decrypt('QBVVU', 'asde')) -> '01234'
```

The key can be at most equal to the length of the text, but can often be much shorter.