1. How would you write a regex that matches a sentence where the first

word is either *Alice*, *Bob*, or *Carol*; the second word is either *eats*, *pets*, or

*throws*; the third word is *apples*, *cats*, or *baseballs*; and the sentence ends

with a period? This regex should be case-insensitive. It must match the

following:

• 'Alice eats apples.'

• 'Bob pets cats.'

• 'Carol throws baseballs.'

• 'Alice throws Apples.'

• 'BOB EATS CATS.'

but not the following:

• 'RoboCop eats apples.'

• 'ALICE THROWS FOOTBALLS.'

• 'Carol eats 7 cats.'

1. Write a regular expression that matches the attribute href and its value (found in an

HTML start tag) in an HTML source file.

1. Write a regular expression that matches strings that represent a price in U.S. dollars.

Your expression should match strings such as '$13. 29' and '$1, 099. 29', for example.

Your expression does not have to match prices beyond $9,999.99.

1. Write a regular expression that matches a string that represents a date given in the format

DD/MM/YYY (where DD is a 2-digit day in the month, MM is a 2-digit representation

of a month, and YYYY is a 4-digit year).

1. Write a regular expression that matches an email address. This is not easy so your

goal should be to create an expression that matches email addresses as closely as you can.

**Practice Projects**

***Strong Password Detection***

Write a function that uses regular expressions to make sure the password

string it is passed is strong. A strong password is defined as one that is at

least eight characters long, contains both uppercase and lowercase characters,

and has at least one digit. You may need to test the string against multiple

regex patterns to validate its strength.

In many contexts (e.g., in some web forms), users must enter a phone

number, and some of these irritate users by accepting only a specific format.

Write a program that readsU.S. phone numbers with the three-digit

area and seven-digit local codes accepted as ten digits, or separated into

blocks using hyphens or spaces,and with the area code optionally enclosed

in parentheses. For example, all of these are valid: 555-123-1234, (555)

1234567, (555) 123 1234, and 5551234567. Read the phone numbers from

sys.stdin and for each one echo the number in the form “(999) 999 9999”

or report an error for any that are invalid, or that don’t have exactly ten

digits.

Write a small program that reads an XML or HTML file specified on the

command line and for each tag that has attributes, outputs the name of

the tag with its attributes shown underneath. For example, here is an extract

from the program’s output when given one of the Python documentation’s

index.html files:

html

xmlns = <http://www.w3.org/1999/xhtml>

meta

http-equiv = Content-Type

content = text/html; charset=utf-8

li

class = right

style = margin-right: 10px

One approach is to use two regexes, one to capture tags with their attributes

and another to extract the name and value of each attribute. Attribute

values might be quoted using single or double quotes (in which case

they may contain whitespace and the quotes that are not used to enclose

them), or they may be unquoted (in which case they cannot contain whitespace

or quotes).It is probably easiest to start by creating a regex to handle

quoted and unquoted values separately, and then merging the two regexes

into a single regex to cover both cases. It is best to use named groups to

make the regex more readable. This is not easy, especially since backreferences

cannot be used inside character classes.