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CPS425

Lab 3

Python problems 1 through 8 on page 214 in the textbook.

Problems 2, 3, 4 in Chapter 1

Problems 1, 2, 3 in Chapter 3

Chapter 1:

Question 2:

The Python version of the code took roughly 4 seconds longer than the 1 second C program. The reason being that Python is an interpreted language versus C a Compiled language.

Question 3:

```
file = open("p0103.txt","r")
mylist = []
dlist = []
alist = []
for i in file:
    this = i.split(" ")
    mylist.append(this)
    for char in this:
        if char[0].isdigit():
            dlist.append(char)

    else:
        alist.append(char)

print(alist)
print(dlist)
```

Question 4:

The Python 3 interpreter provides a better error message when using the command line versus the C compiler. The C compiler I am using does not even prompt the user with an error message for dividing by zero, while Python 3 does prompt the user.

Chapter 3:

Problem 1:

$a^*|b^*$

$S \rightarrow V$

$S \rightarrow T$

$T \rightarrow aT$

$T \rightarrow \lambda$

$V \rightarrow bV$

$V \rightarrow \lambda$

Problem 2:

a^*b^*

$S \rightarrow aS$

$S \rightarrow bS$

$S \rightarrow \lambda$

Problem 3:

$\{(ab)^i c^i \mid i > 2\}$ --- 2 CFGs

a)

$S \rightarrow abS$

$S \rightarrow Sc$

$S \rightarrow \lambda$

b)

$S \rightarrow T$

$T \rightarrow abT$

$T \rightarrow abV$

$V \rightarrow Vc$

$V \rightarrow \lambda$