EE2703 : Applied Programming Lab Assignment-1

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EE19B044

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Aim

Writing a code to do the following:-

i. Accept the name of the netlist file as a command-line.

ii. Check for errors and give an appropriate error message if needed.

iii. Determine the section that contains the circuit definition.

iv. Parse each line of the section and extract the words (tokens).

v. Analyze the tokens and determine the from node, the to node, the type of element, and the value. If it is a dependent source, extract additional information.

vi. Close the file when all the lines have been read in.

vii. Traverse the circuit definition from the last element to first and print out each line with words in reverse order.

Pseudo Code

Define constants

- CIRCUIT=.circuit

- END=.end

Open the file to be read

- open("filename") as f

Find the start and end of circuit definition

- if CIRCUIT==line[:len(CIRCUIT)]:
  start=lines.index(line)
- elif END==line[:len(END)]:
  end=lines.index(line)

Remove comment, Split the words, Reverse the words, Reverse the lines, Move to next line

- for line in reversed([' '.join(reversed(line.split('#')[0].split())) for line in lines[start+1:end]]):

Code

```
"""
Course: EE2703-Applied Programming Lab
Name: Nihal Gajjala
Roll Number: EE19B044
Assignment 1
"""
from sys import argv, exit
# Assigning Constant Variables
CIRCUIT='.circuit'
END='.end'
# Validating The Number Of Arguments
if len(argv)!=2:
    print('\nUsage: %s <inputfile>' %argv[0])
    exit()
# Validating The File Name
try:
    # Opening And Reading The File
    with open(argv[1]) as f:
        lines=f.readlines()
        start=-1
        end=-2
        # Locating The Beginning And End Of The Circuit By Checking Fo
        for line in lines:
            if CIRCUIT==line[:len(CIRCUIT)]:
                start=lines.index(line)
            elif END==line[:len(END)]:
```

```
                end=lines.index(line)
                break
        # Validating The Content In The Netlist i.e, Checking If .circ
        if start>=end or start<0 or end<0:
            print('Invalid circuit definition')
            exit(0)
        # Traverse The Circuit Definition From Last Element To First E
        while end>start:
            '''
            Removing Blank Spaces At The Beginning
            Removing Comments After '#'
            Splitting The String Into A List With Space As Separator
            '''
            line1=lines[end].split('#')[0].split()
            # Reversing The Order Of The Contents In The Given List
            line2=reversed(line1)
            # Joining The Contents Of The List Using spaces
            line3=' '.join(line2)
            # Printing The Final Line
            print(line3)
            end-=1
        # Closing The File
        f.close()
# Printing Error Message For A Wrong Filename
except IOError:
    print('Invalid file')
    exit()
```

Result

Input 1

.circuit
R... n1 n2 value
E... n1 n2 n3 n4 value
.end

Output 1

value n4 n3 n2 n1 E...
value n2 n1 R...

Input 2

.circuit
R1 GND 1 1e3

R2 1 2 4e3
R3 2 GND 20e3
R4 2 in3 8e3
R5 GND in1 10e3
V1 GND in1 5
.end

Output 2

5 in1 GND V1
10e3 in1 GND R5
8e3 in3 2 R4
20e3 GND 2 R3
4e3 2 1 R2
1e3 1 GND R1

Input 3

R1 1 GND 1e3
R2 1 2 2e3
R3 2 3 4e3
V1 3 GND 2
V2 2 4 5
R4 4 5 5e3
I1 5 GND 1
R6 4 6 8e3
I2 GND 6 10

Output 3

"Invalid circuit definition"

Input 4

name:Nihal Gajjala
roll number:EE19B044
.circuit
V1 GND 1 10 #Independent Voltage Source 1
R1 1 2 1e3 #Resistor 1
R2 2 3 1e3 #Resistor 2
R3 3 4 1e3 #Resistor 3
R4 4 5 1e3 #Resistor 4
R5 2 GND 2e3 #Resistor 5
R6 3 GND 2e3 #Resistor 6
R7 4 GND 2e3 #Resistor 7
R8 5 GND 2e3 #Resistor 8
.end
email:ee19b044@smail.iitm.ac.in

Output 4

```
2e3 GND 5 R8
2e3 GND 4 R7
2e3 GND 3 R6
2e3 GND 2 R5
1e3 5 4 R4
1e3 4 3 R3
1e3 3 2 R2
1e3 2 1 R1
10 1 GND V1
```