CD Lab Practical 6

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Batch : B1

Aim : Write a program to generate three address codes for the given language construct using SDTS.

Code:

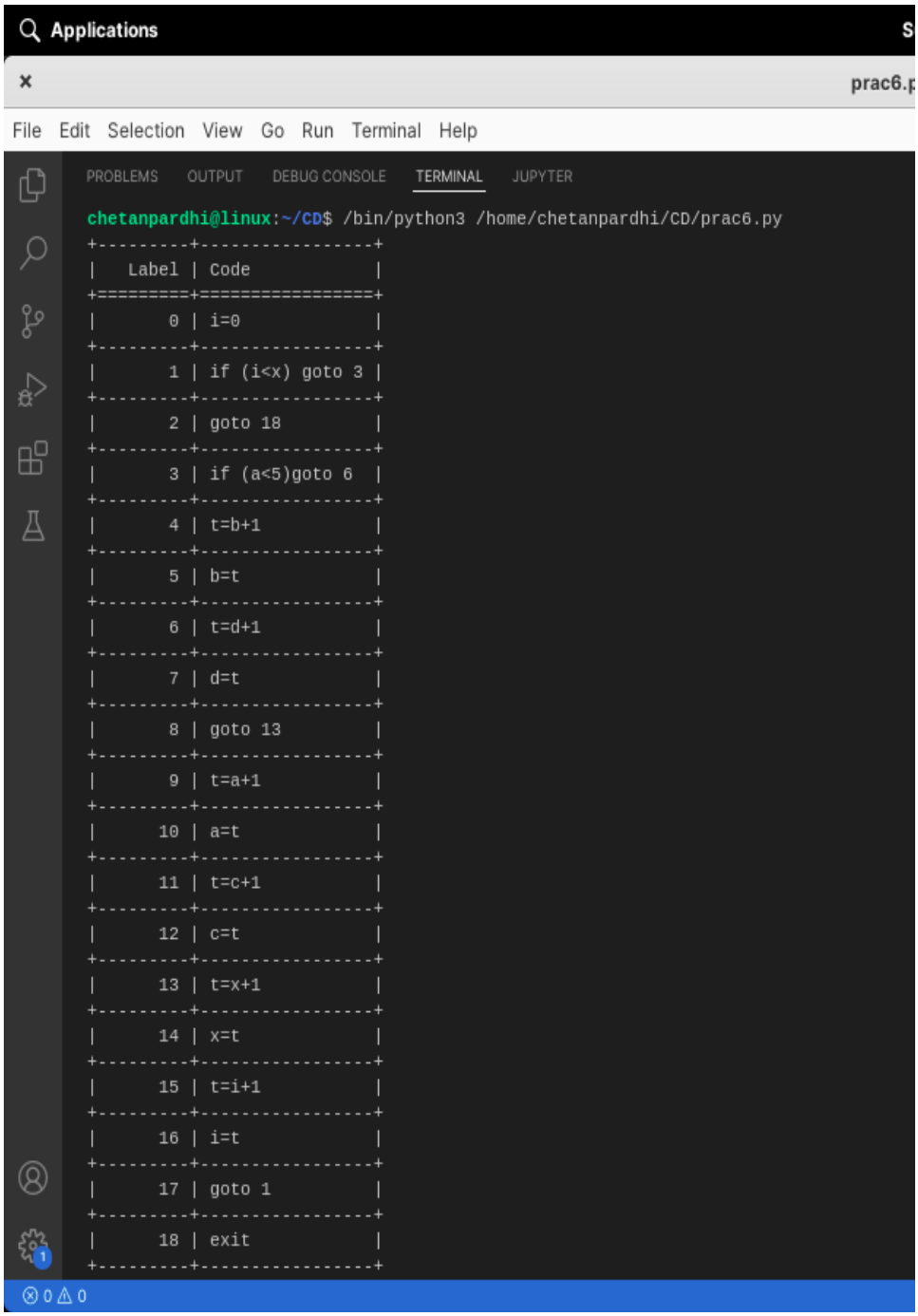
```
from tabulate import tabulate


def main():
   path = 'input.txt'
   with open(path, 'r') as file:
       lines = file.readlines()


   for i in range(len(lines)):
       lines[i] = lines[i][:-1]


   for_statement = ""
   for i in range(len(lines)):
       if 'if' in lines[i]:
```

```
        if_statement = lines[i]
        if_statement_index = i

    if 'else' in lines[i]:
        else_statement = lines[i]
        else_statement_index = i

    if 'for' in lines[i]:
        for_statement = lines[i].split(";")[0]
        for_statement_index = i

statements = for_statement.replace('for','if').split("(")
for_statement = statements[0]+" ("+statements[1]+")"

if_statement_list = []
else_statement_list = []
else_final = []
if_final = []
for_final = []

for j in lines[if_statement_index+2:]:
    if '}' in j:
        break
    if_statement_list.append(j)

for i in if_statement_list:
    c,p = i.split('=')
```

```
        if_final.append('t='+p)
        if_final.append(c+'=t')


    for j in lines[else_statement_index+2:-1]:
        if '}' in j:
            break
        else_statement_list.append(j)


    for i in else_statement_list:
        c,p = i.split('=')
        else_final.append('t='+p)
        else_final.append(c+'=t')


    c,p = lines[-2].split('=')
    for_final.append('t='+p)
    for_final.append(c+'=t')


    li_final = []
    exit_goto = len(else_final) + len(if_final) + len(for_final) + 3 + 3 +
2

    li_final.append(for_statement +' goto '+str(3))
    li_final.append('goto '+str(exit_goto))
    li_final.append(if_statement+'goto '+str(len(else_final)+2))
    for i in else_final:
        li_final.append(i)
    goto_if = len(else_final) + (len(if_final)+1) + 4
    li_final.append('goto '+str(goto_if))
```

```
    for i in if_final:
        li_final.append(i)
    for i in for_final:
        li_final.append(i)
    li_final.append("t=i+1")
    li_final.append("i=t")
    li_final.append('goto 1')
    li_final.append('exit')

    table = []
    lis = []
    lis.append(0)
    lis.append("i=0")
    table.append(lis)
    for i in range(len(li_final)):
        li = []
        li.append(i+1)

        li.append(li_final[i])
        table.append(li)

    head = ['Label','Code']
    print(tabulate(table, headers=head, tablefmt="grid"))

if __name__ == '__main__':
    main()
```

Screen-Shot


Applications
prac6.p
File Edit Selection View Go Run Terminal Help
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
chetanpardhi@linux:~/CD$ /bin/python3 /home/chetanpardhi/CD/prac6.py
Label	Code
0	i=0
1	if (i<x) goto 3
2	goto 18
3	if (a<5)goto 6
4	t=b+1
5	b=t
6	t=d+1
7	d=t
8	goto 13
9	t=a+1
10	a=t
11	t=c+1
12	c=t
13	t=x+1
14	x=t
15	t=i+1
16	i=t
17	goto 1
18	exit
⊗ 0 ⚠ 0