Shri Ramdeobaba College of Engineering and Management, Nagpur
Department of Computer Science and Engineering
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Compiler Design Lab

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Sec : A

Roll no. : 43

Batch : A3

Subject : Compiler Design

PRACTICAL No. 5

Aim:

> **Write a program to generate three address code for the given language construct using SDTS.**
> **(a) Batch A1 : if-then-else,**
> **(b) Batch A2: for loop**
> **(c) Batch A3: while loop**
> **(d) Batch A4: do while loop**

Code:

```python
# import numpy as np
# import pandas as pd
from prettytable import PrettyTable


def whileloop(code):
  fc = []
  idx = None
  for i in range(len(code)):
   just = code[i]

   if 'while' in just:
     idx = i
     newid = just.index('(')
     end_idx = just.index(')')
     bool_condn = ''.join(just[newid:end_idx + 1])
     fc.append('if !{} goto({})'.format(bool_condn, None))
     idx = i
   elif '}' in just:
     fc.append('goto({})'.format(idx + 1))
     fc[idx] = fc[idx].replace('None', str(i + 2))
     idx = None
   else:
```

```
    fc.append(just)
  return fc


with open('while.txt') as f:
  code = f.readlines()

print('Given while-loop code is:')
print(''.join(code))
ans = []
for i in range(len(code)):
  if code[i] != '\n':
    if code[i][-1] == '\n':
      ans.append(code[i][:-1].strip())
    else:
      ans.append(code[i].strip())

fans = whileloop(ans)
fans.append('END')

print('\nThree address code for given while-loop code is:')
show = PrettyTable()
show.field_names = ['Serial No', 'Three address code']
for i in range(len(fans)):
  show.add_row([i + 1, fans[i]])

print(show)
```

Input:

c = 0;
a = 1;
b = 2;

while(a < b){
**   c=1;**
}

Output:

```
Given while-loop code is:
c = 0;
a = 1;
b = 2;

while(a < b){
    c=1;
}
```

Three address code for given while-loop code is:

Serial No	Three address code
1	c = 0;
2	a = 1;
3	b = 2;
4	if !(a < b) goto(7)
5	c=1;
6	goto(4)
7	END