

CD Practical 10

Name : Chetan Pardhi

Roll No. : 22

Batch : B1

Aim : Write a program to generate the code using simple code generation algorithm.

Code :

```
location = {}
register = {"R0": 0, "R1": 0}

operations = {'+': 'ADD', '-': 'SUB', '*': 'MUL', '/': 'DIV'}

f = open('cd_prac10.txt')
lines = f.read().split('\n')
print(*lines)
machine_code = []

for line in lines:
    lhs, rhs = line.split('=')
    operator = rhs[1]
    operand1, operand2 = rhs.split(operator)

    isOp1Present = location.get(operand1)

    if isOp1Present == None:
        for reg in register:
            if register[reg] == 0:
                break
        inst1 = "MOV " + operand1 + ", " + reg
```

```

        inst2 = operations[operator] + " " + operand2 + ", " +
reg
        machine_code.append(inst1)
    else:
        reg = location.get(operand1)
        inst2 = operations[operator] + " " + location[operand2] +
", " + reg

        register[reg] = 1
        location[lhs] = reg

        machine_code.append(inst2)

machine_code.append("MOV " + reg + ", " + lhs)

print()
print('-'*10, 'Three Address code', '-'*10)
for line in lines:
    print(line)

print()
print('-'*10, 'Machine Code', '-'*10)
for line in machine_code:
    print(line)

```

Input :

t=a+b

u=c+d

v=t-u

x=v+u

Output :

```
t=a+b u=c+d v=t-u x=v+u
```

```
----- Three Address code -----
```

```
t=a+b
```

```
u=c+d
```

```
v=t-u
```

```
x=v+u
```

```
----- Machine Code -----
```

```
MOV a, R0
```

```
ADD b, R0
```

```
MOV c, R1
```

```
ADD d, R1
```

```
SUB R1, R0
```

```
ADD R1, R0
```

```
MOV R0, x
```