

Compiler Design

Assignment-5 Report

Conversion of Expressions to Three Address Code

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Lex & Yacc files for generating three-address code for expressions like

- Assignment Operator: =
- Arithmetic Operators: +, -, *, /
- Loops: WHILE (Loops are simple and not nested)
- Relational Operators: >, >=, <, <=
- Type System: Integer
- Conditional Statements: Simple IF-Else (Not Nested)
- As there is no braces we have done some changes in Input Cases
- Arrays like a[i] , a[i][j]

1 . Input : IF -Else (then is added)

if(k+8) then k=18;else c=s;

Output :

```
t0 = k + 8
t1 = not t0
if t1 goto L1
k = 18
```

```
goto L2
L1:
c = s
L2:
```

2 . Input : While along with Relational Operators

```
while(k=c/s)k=k*c+d;
```

Output :

```
L1:
t0 = c / s
k = t0
t1 = not k
if t1 goto L0
t2 = k * c
t3 = t2 + d
k = t3
goto L1
L0:
```

3. .Input : Arithmetic & Assignment Operators

```
a=(k+8)*(c-s)
```

Output :

```
t0 = k + 8
t1 = c - s
t2 = t0 * t1
a = t2
```

4 .Input : Arrays

```
a[i][j]
```

Output :

`t0 = i`

`t1 = a[t0]`

`t2 = j`

`t3 = t0[t2]`