

# CS241

## Tutorial 12

### Changes to Lexical syntax

- add boolean value true|false
- bool type
- bool && ||

### Changes to Context Free Syntax

- type -> BOOL
- factor -> BVAL
- bexpr -> bterm
- bexpr -> bexpr || bterm
- bterm -> bterm && bfactor
- bfactor -> !bfactor
- bterm -> bfactor
- bfactor -> test
- dcls -> dcls = BVAL;
- stmt => if( bexpr ) ... while (bexpr)...
- test test OP expr ###Sample Code Generation
- dcls -> dcls dcl = bval;

```
code(dcls) =
code(dcls)
if(bval == true)
    add $3, $11, $0
else
    add $3, $0, $0
sw $3, -4(430)
sub $30, $30, $4
```

- factor -> !factor

```

    code(factor) =
    code(factor)
    sub $3, $11, $3

```

- $\text{expr} \rightarrow \text{expr} \parallel \text{term}$

```

code(expr) =
    code(expr)
    push($3)
    code(term)
    pop($5)
    add $3, $3, $5
    beq $3, $0, 1
    add $3, $11, $0

```

OR

```

code(expr) =
    code(expr)
    bne$0, $3, skipX
    code(term)
    skipX:

```

$\sigma$