Lab 1

Submit GitHub username via form.

Piazza

Survey on Lab 1 and Raspberry Pi HW

Labs

Grading

| | |
|---|---|
| check + | 100 |
| check | 90 |
| check- | 80 |
| no submit | 0 |

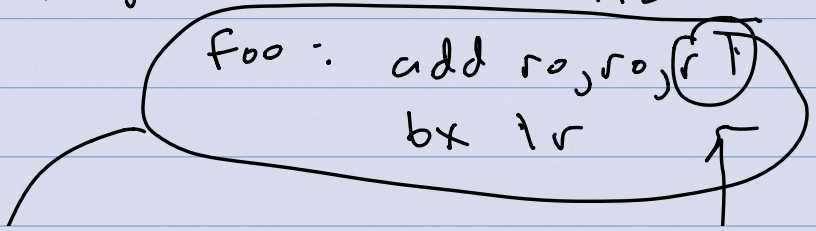
Project 02 - ntlang ★ language

little language for working with decimal, hexadecimal, binary bit manipulation

```
x = (0xFACE1234 >> 24) & 0xF
printbin(x)
```

Project 03 - ARM Assembly Language

```
foo: add r0,r0,r1
     bx lr
```

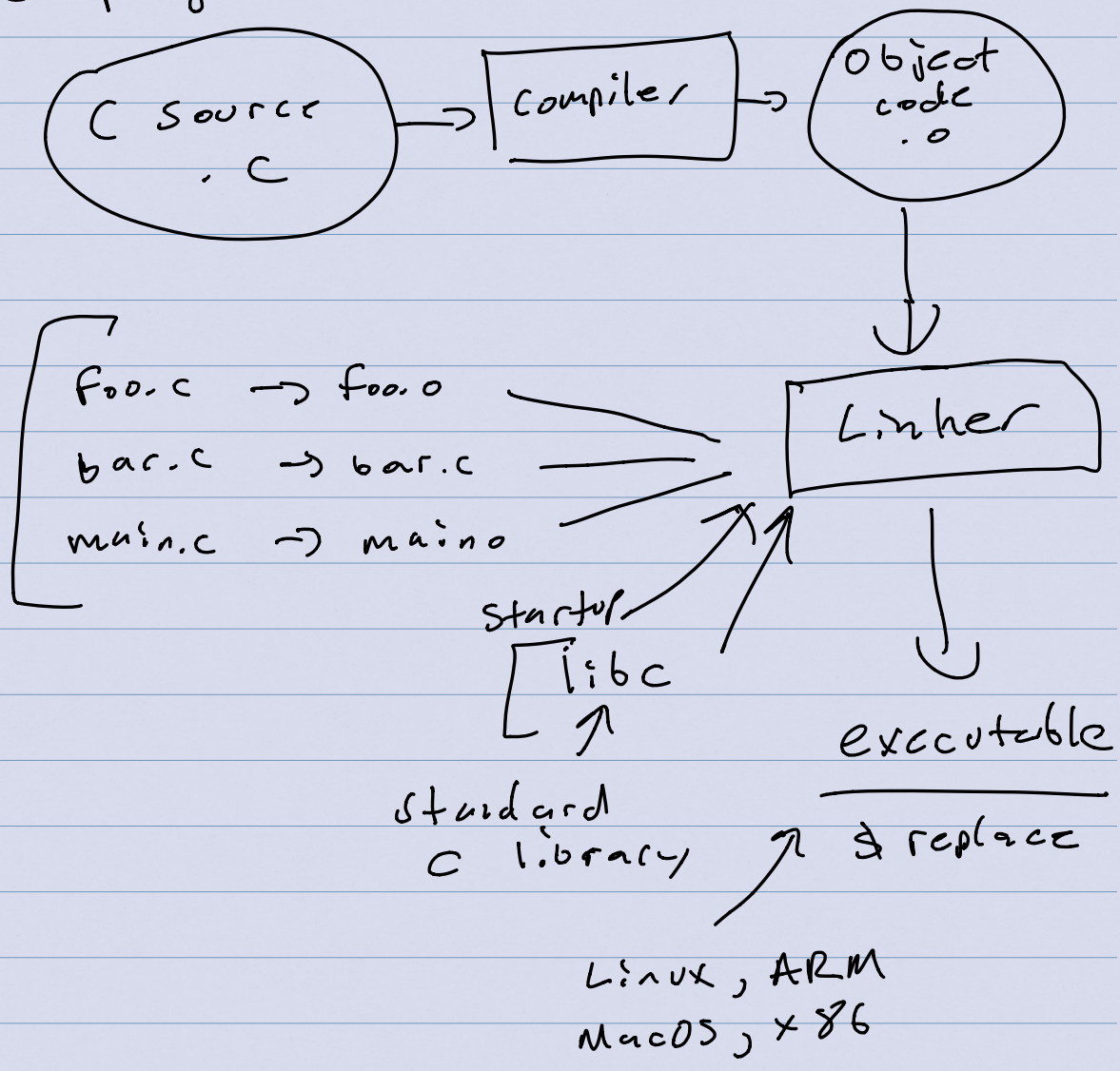


Project 04 ARM Assembler * language

machine code
E080 0001
E12F FF1E

---

C programs



# Language Processing

token

```
int foo(int x, int y) {
    return x + y;
}
```

1. x File I/O - read source file into memory
2. x Scanning - Scanner identify tokens
3. x Parsing - Parser tree
4a x Compiler - Code generation -> machine code

OR

4b Interpreter - tree

ntcalc

```
x = 1
y = 2
z = x + y
printdec(z)
```

⇒ ntlang

---

Scanning

enum

42 ⇒ TK_INTLIT, TK_PLUS, TK_INTLIT

```
www + 2;
```

1. + - * / = 

2. ignore whitespace
3. integers 201, 12
4. identifiers x, pos_x, foo

EBNF Extended Backus-Naur form

tokens ::= (symbol)*

symbol ::= '+' | '-' | '*' | '/' | ':='

↑ production rules

+

++

+-*/