

Data in C

- 1. Global data (statically allocated)
- 2. Stack data (dynamically allocated)
- 3. Heap data (dynamically allocated)
 malloc() / free()

```
int x;
```

```
double z;
```

```
char name[32];
```

```
struct node_st {
```

```
    char name[32];
```

```
    int id;
```

```
};
```

```
struct node_st node;
```

global

```
int x;
```

```
double z;
```

```
char name[32];
```

```
struct node_st node;
```

```
int foo(int x) {
```

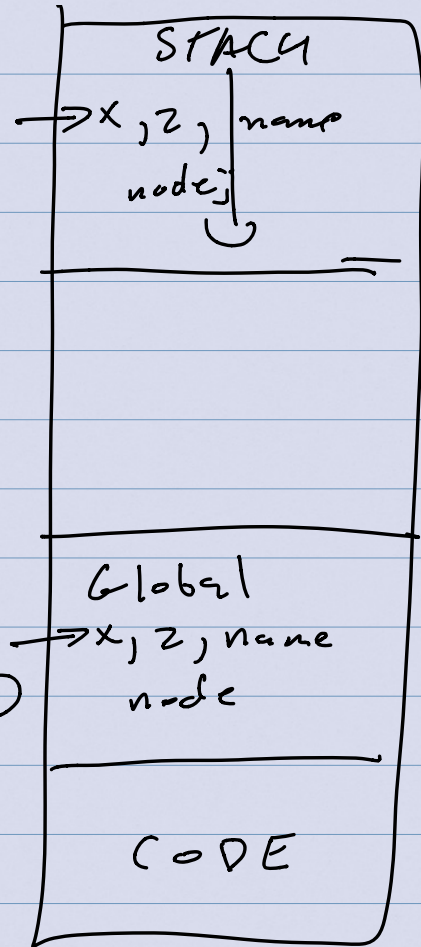
```
    int x;
```

```
    double z;
```

```
    char name[32];
```

```
    struct node_st node;
```

```
}
```

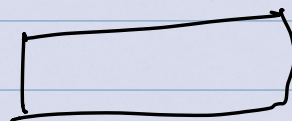


```
int *ip; (int*)ip
```

```
char *cp;
```

```
double *dp;
```

```
struct node_st *np;
```

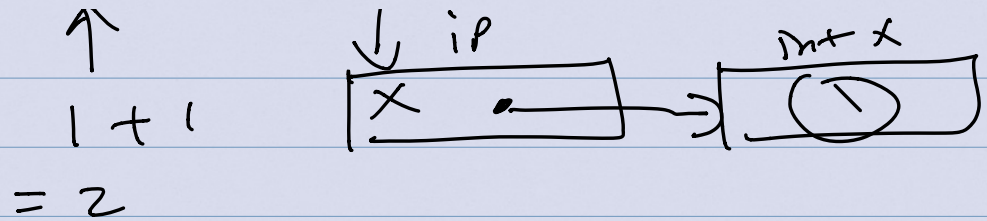


32 bit
4 bytes 64 bit

$x = 1$ ← "address of"

```
ip = &x;
```

```
x = *ip + 1
```



```

struct node_st node;
struct node_st *np;

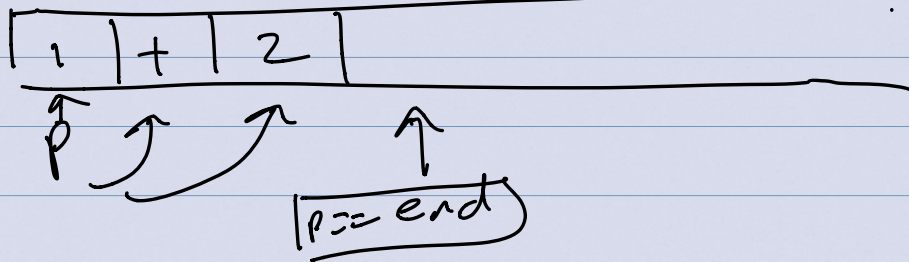
```

$np = \&node;$ $node.id = 99$

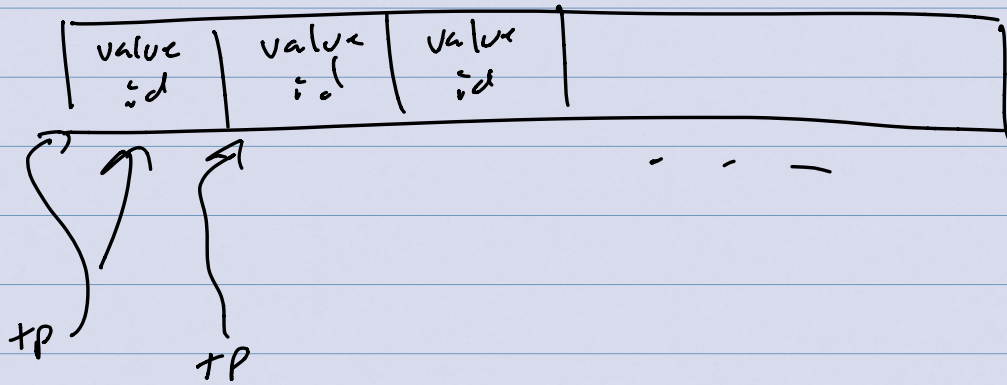
(⊖) $np \rightarrow id = 99$
 (⊖) $\underbrace{(*np)}_{\uparrow}.id = 99$

++-

$$(36 * 4096) + 4 =$$



table



tokens ::= (symbol) *

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

+ 11 - 111 +

integers

22 + 1 - 300/3