

Variables

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Variables

- Variable
 - Symbolic representation for a value - name
 - Stored in memory (data)
 - Can be modified during execution
- Since it requires space in memory it must have a type to tell the compiler how much space to reserve
- Allowed characters: **letters**, **numbers**, **_**
- Cannot begin with a number

Variables

- Variable Declaration
 - Specify the type and name for a variable
 - Must be declared before it can be used

```
int foo;  
float rate;  
char initial1;
```

```
int var1, this, is, not, a, good, practice;
```

```
int AccountBalance;  
int annual_interest_rate;
```

**** Note: name length has no impact on compiled program size
focus on readable code**

Variables

- Variable Initialization
 - Variables are not initialized just by declaring them
 - They do not automatically have a value of 0
 - They may well have garbage values

Nothing stops you from using an un-initialized variable

```
int foo = 23;
```

```
int foo, boo = 23;
```

```
int count;  
count = 0;
```

```
int foo = 23, boo = 23;
```

```
char fx = 'A';
```

```
float pie = 3.14159;
```

Variables

- Variables and Memory

```
int foo;  
char initial1;  
float rate;  
char initial 2;  
int boo;
```

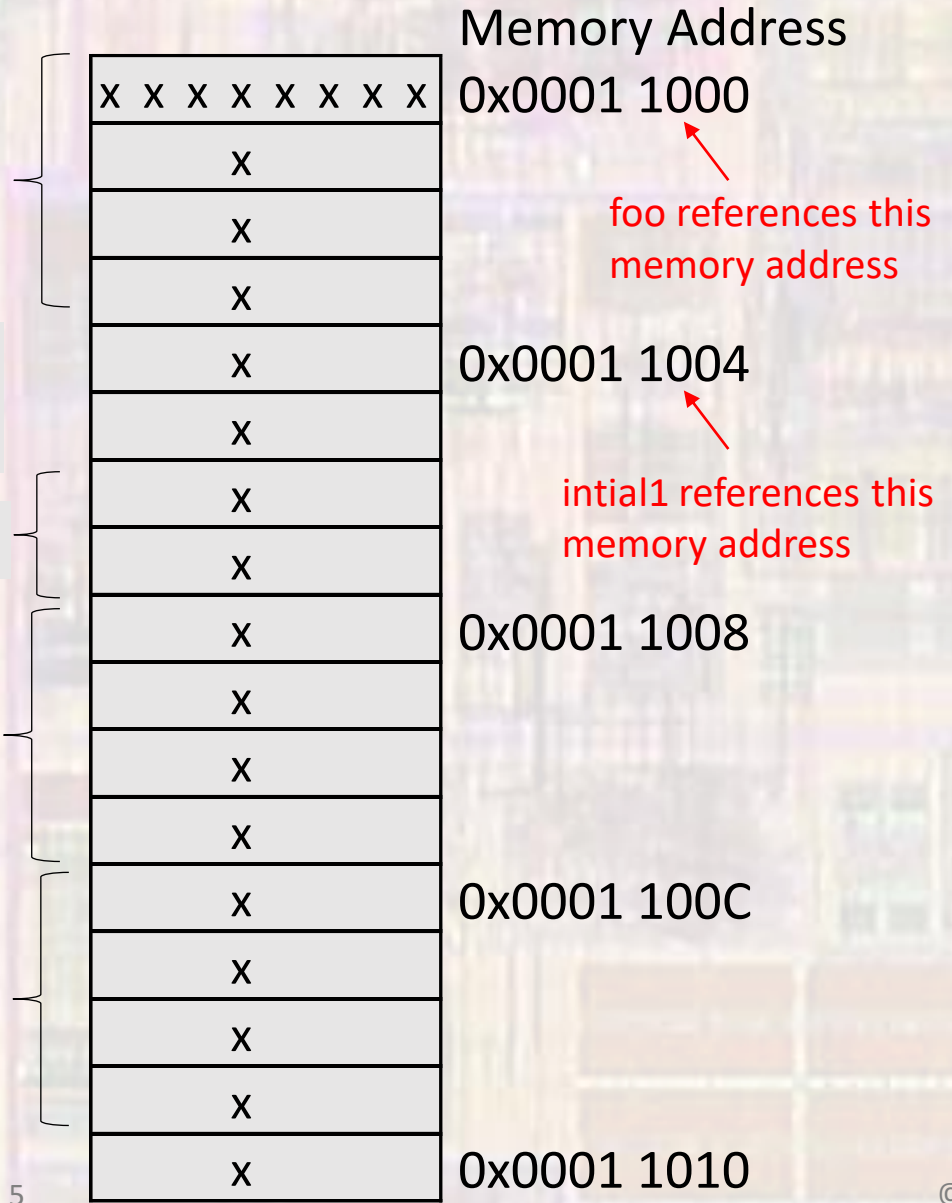
reserved for foo
has garbage in it

initial 1
initial 2

unused - alignment

rate

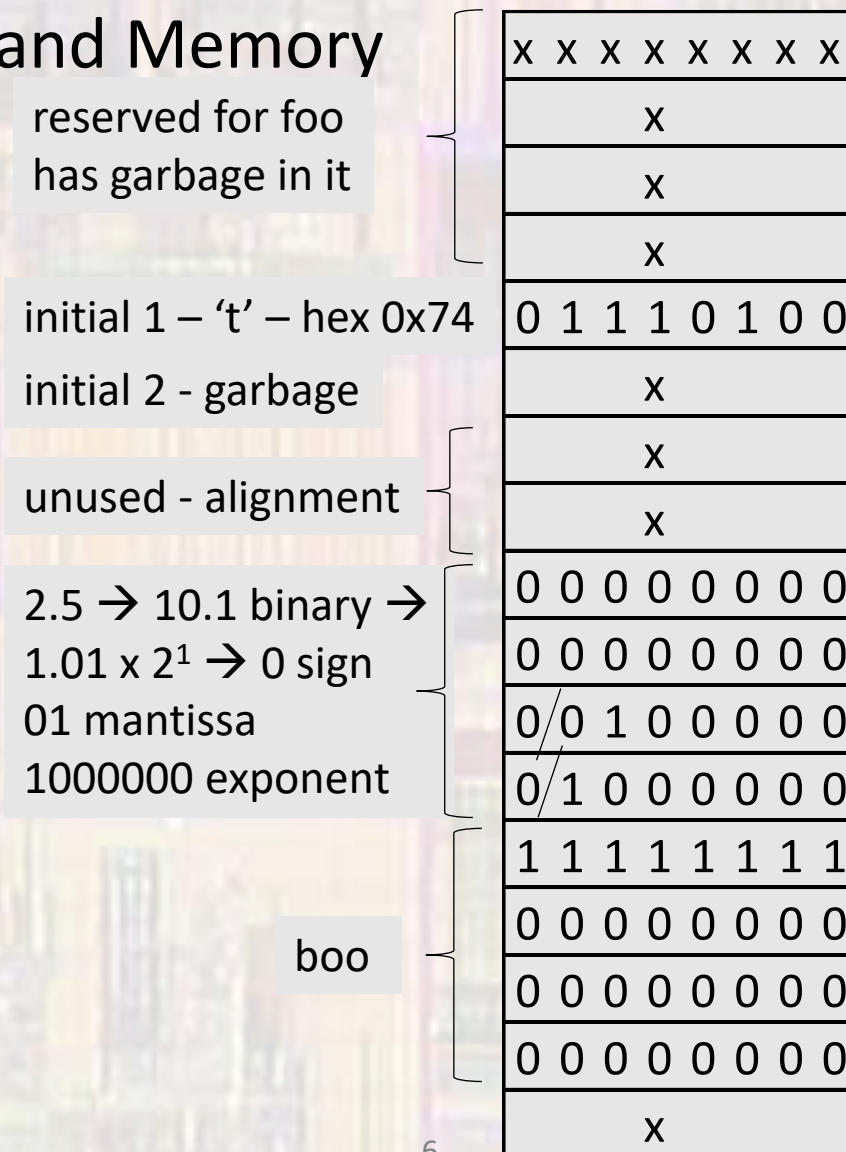
boo



Variables

- Variables and Memory

```
int foo;
char initial1;
float rate;
char initial 2;
int boo;
initial1 = 't';
rate = 2.5;
boo = 255;
```



foo references this memory address

initial1 references this memory address