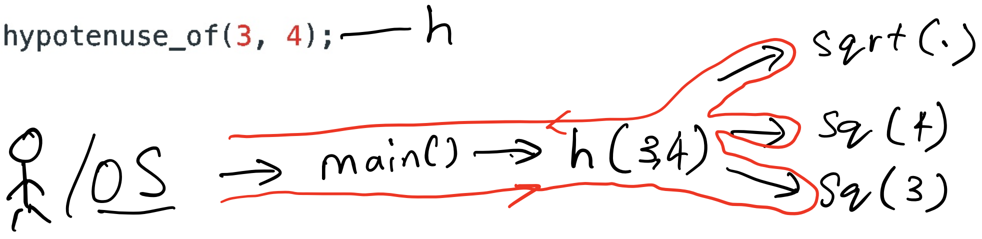
What is a call Stack?

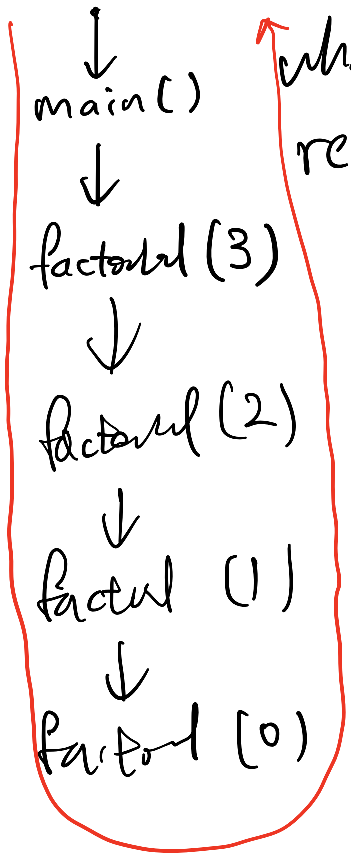
```
long square(long x)
{
  return x*x;
}

double hypotenuse_of(long base, long height)
{
  return sqrt(square(base) + square(height));
}

int main()
{
  hypotenuse_of(3, 4);
}
```

Sqrt Sq

h

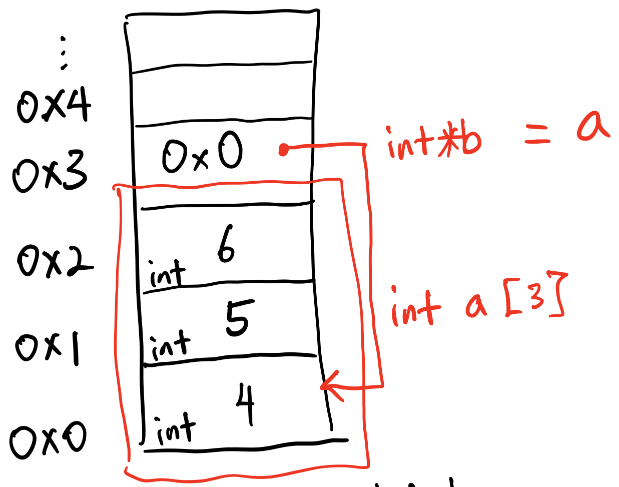


```
long factorial(long n) {
  if (n == 0) {
    return 1;
  }
  return factorial(n-1) * n;
}
int main() {
  factorial(3);
}
```



what is a recursive call?

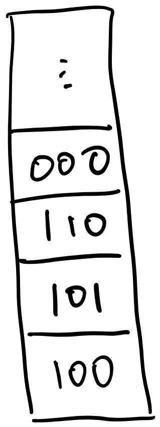
What is Addresses?



what we think.

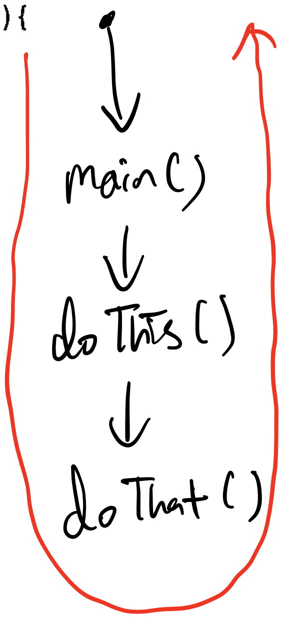
ie Semantics

in actual...



What your Computer Sees.

```
void doThat(long a[], long b[]) {
  a[0] = 100;
  b[1] = 200;
  // Line A
}
void doThis(long a[]) {
  long *b = a;
  doThat(a, b);
}

int main() {
  long a[3] = {0, 0, 0};
  doThis(a);
  // Line B
}
```

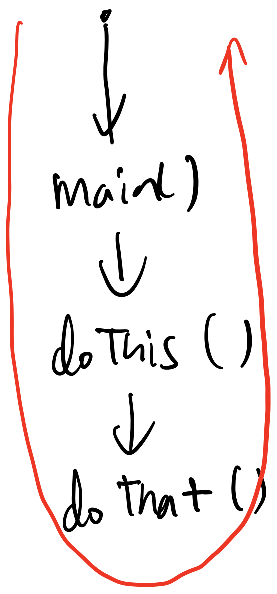


What is const?

Const is a qualifier

Objects declared with const-qualified types may be placed in read-only memory by the compiler, and if the address of a const object is never taken in a program, it may not be stored at all.
Any attempt to modify an object whose type is const-qualified results in undefined behavior.

```
void doThat(long list[]) {
  list[1] = 200;
  // Line A
}
void doThis(const long a[]) {
  long b[2] = {10, 10};
  a = b;
  doThat(a);
}

int main() {
  long a[3] = {0, 0, 0};
  doThis(a);
  // Line B
}
```



$\underbrace{\text{const long a[]}}_{\text{read only array}}$ $\swarrow$ but the pointer is not read-only.