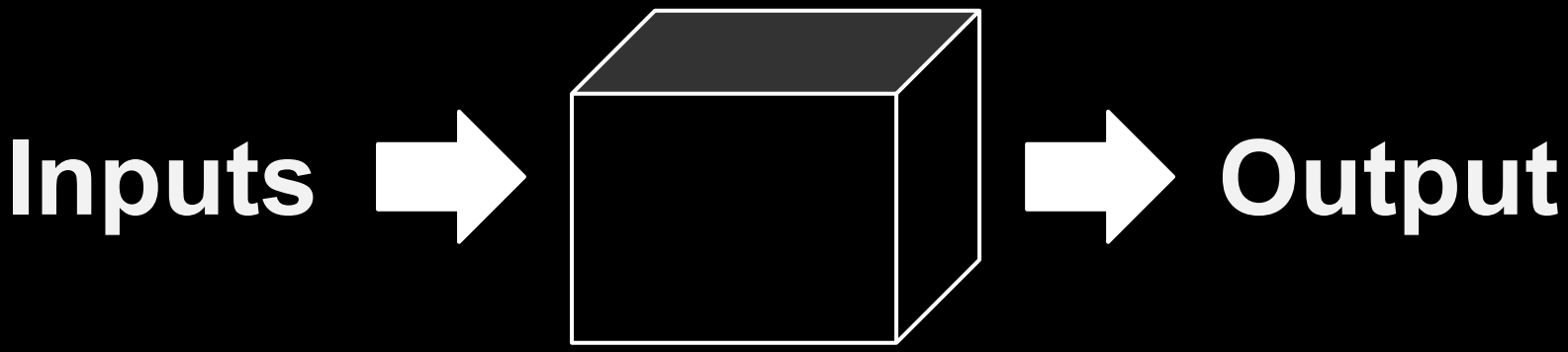
Functions

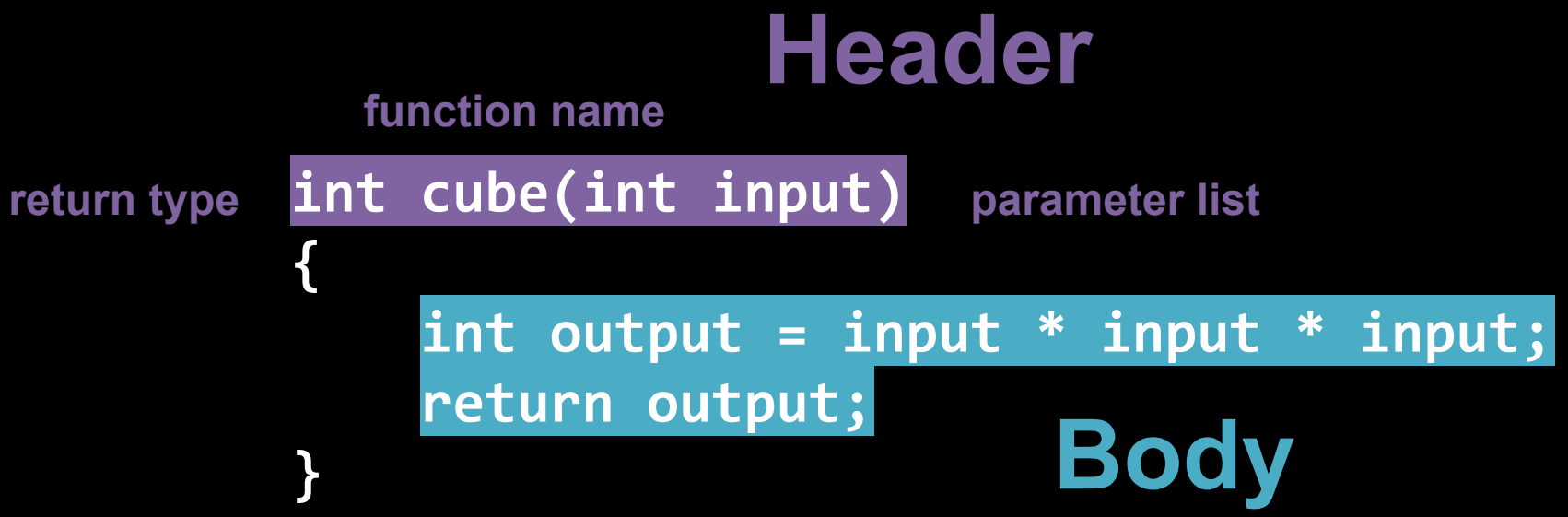


Why Functions?

- Organization
- Simplification
- Reusability

A Function Definition

```
int cube(int input)
{
    int output = input * input * input;
    return output;
}
```

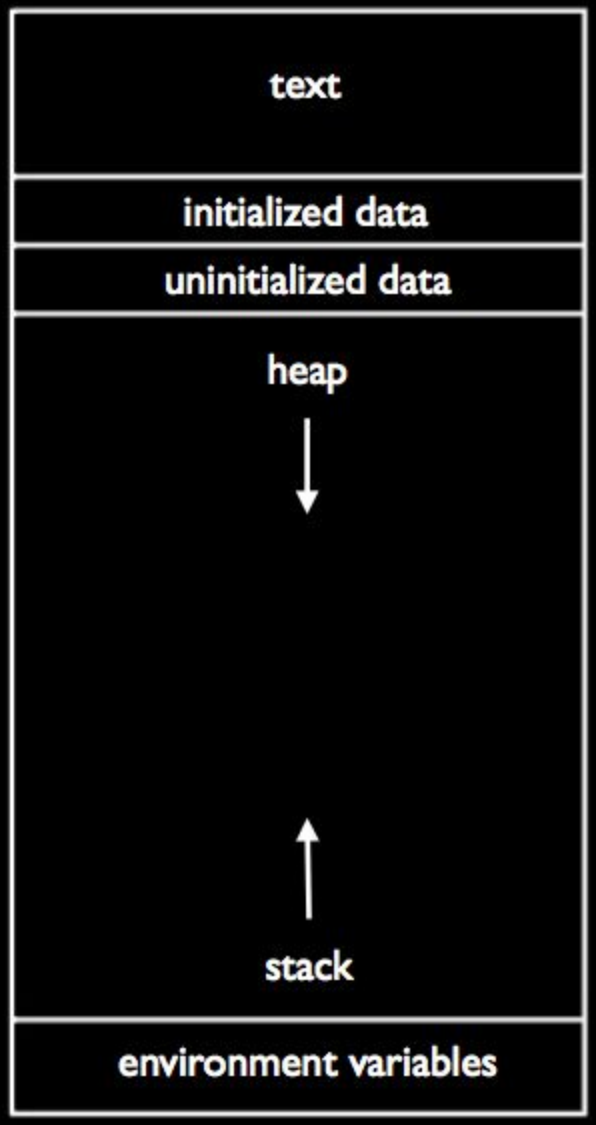

Header
function name
return type
int cube(int input)
parameter list
{
int output = input * input * input;
return output;
}
Body

```c
#include <stdio.h>

int cube(int input);

int main(void)
{
    int x = 2;
    printf("x is %i\n", x);
    x = cube(x);
    printf("x is %i\n", x);
}

int cube(int input)
{
    int output = input * input * input;
    return output;
}
```


text
initialized data
uninitialized data
heap
stack
environment variables


cube()'s locals
cube()'s parameters
main()'s locals
main()'s parameters

```c
void swap(int a, int b);

int main(void)
{
    int x = 1;
    int y = 2;
    swap(x, y);
    printf("x is %i\n", x);
    printf("y is %i\n", y);
}

void swap(int a, int b)
{
    int tmp = a;
    a = b;
    b = tmp;
}
```