



```
*****  
* convolve.c  
***** /
```

```
/* Standard includes */  
#include <assert.h>  
#include <math.h>  
#include <stdlib.h> /* malloc(), realloc() */
```

```
/* Our includes */  
#include "base.h"  
#include "error.h"  
#include "convolve.h"  
#include "klt_util.h" /* printing */
```

```
#define MAX_KERNEL_WIDTH 71
```

```
typedef struct {  
    int width;  
    float data[MAX_KERNEL_WIDTH];  
} ConvolutionKernel;
```

```
/* Kernels */
```

# Fundamentals of Programming

## lecture 10

## variable scopes

# Variable Scope

---

```
#include <stdio.h>

int main() {
    int x = 2;

    if (1) {
        x = 3;

        printf("%d\n", x);
    }

    printf("%d\n", x);
}
```

# Variable scope

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        int x;
        x = 3;

        printf("%d\n", x);
    }

    printf("%d\n", x);
}
```

# Variable scope

```
#include <stdio.h>

int main() {
    int a, x;

    {
        double b, x;

        {
            int x;
            int y;
        }

    }

}
```

# Variable scope

```
#include <stdio.h>

int main() {
    int a, x;

    {
        double b, x;

        {
            int x;
            int y;

        }

    }

}
```

```
#include <stdio.h>

int main() {
    int a, x;

    a = 1;
    while (a < 10) {
        int x = 2;

        if (a > 5) {
            double a,x,d;

            printf("%f",x);
        }

        a++;
    }

}
```

# Variable scope

```
#include <stdio.h>

int main() {
    int a, x;

    {
        double b, x;

        {
            int x;
            int y;
        }

    }

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int main() {
    int a, x;

    a = 1;
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        int x = 2;

        if (a > 5) {
            double a,x,d;

            printf("%f",x);
        }

        a++;
    }

}
```

```
#include <stdio.h>

void func1(int a, double x, double d);

int main() {
    int a, b, x, y;

    a = 1;
    while (a < 10) {
        int x = 2;

        if (a > 5) {
            double x=2.0,d;
            func1(a,x,d);
        }

        a++;
    }

    void func1(int a, double x, double d) {
        double y;
        double b;

        if (x > 0) {
            int b;
            y = x * d;
            b = (int) (a * x);

            printf("%d", b);
        }
    }

}
```

# Global variables

```
#include <stdio.h>

void sqr(void);

int x;

int main() {
    x = 4;

    printf("%d\n",x);

    sqr();

    printf("%d\n",x);
}

void sqr() {
    x = x*x;

    printf("%d\n",x);
}
```



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int main() {
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    printf("%d\n",x);

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#include <stdio.h>

void sqr(int);

int x;

int main() {
    x = 4;

    printf("%d\n",x);

    sqr(x);

    printf("%d\n",x);
}

void sqr(int x) {
    x = x*x;

    printf("%d\n",x);
}
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#include <stdio.h>

void sqr(int);

int x;

int main() {
    x = 4;

    printf("%d\n",x);

    sqr(x);

    printf("%d\n",x);
}

void sqr(int x) {
    x = x*x;

    printf("%d\n",x);
}
```