

## Preprocessor Directive: #include

### File main.c

```
#include "/usr7/wittels/cs1005/nw.h"
main()
{
    int n;
    printf("Integer please: ");
    #include "/usr7/wittels/cs1005/scan.txt"
    printf("The square root is %f\n",sqrt(n));
}
```

### File nw.h

```
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
#include <ctype.h>
#include <string.h>
```

### File scan.txt

```
scanf("%d",&n);
```

## Preprocessor Directives: Define

```
#define PI 3.1415926535
#define SQUARE(x) (x) * (x)
main()
{
    printf("sqrt(2)= %f\n",sin(2.0*sin(PI/4.0));
    printf("pi squared = %f\n",SQUARE(PI);
}

#ifndef SQUARE
    lots of preprocessor directives
#else
    lots more preprocessor directives
#endif

#ifndef PI
    #define PI 4.0 * atan(1.0)
#endif

#undef PI
```

## Array Fundamentals

```
#define SIZE 35
int array[SIZE]; /* declaration */
array[19] = 3 * array[32]; /* assignment */
array[-3] = array[500]; /* no bounds checking */
for(i=0; i<SIZE; i++) printf("%d %d", i, array[i]);
```

**But don't use an array in scanf() (for now).**

You **can** use an array in a function call

## Initializing Arrays

```
float nums[4] = {1.0, 0.3, 2.25, 4.5};
```

```
int size[] = {3, 1, 5, 99, 18, -1};
```

```
double height[100];
```

```
double height[100] = {1.0, 35.3};
```

```
int area[SIZE] = {0};
int year[SIZE] = {97};
```

```
int i, n[SIZE];
for (i=0; i<SIZE; i++) n[i] = i;
```