

Programming in C

Reading Chapter 1

What is the Output?

```
#include <stdio.h>

#define MAX_NUMS 5

static unsigned int isEven(int n);

int main()
{
    int i;

    for (i = 1; i <= MAX_NUMS; ++i)
    {
        if (isEven(i))
        {
            printf ("Value = %5u\n", i);
        }
    }
    return 0;
}
```

```
static unsigned int isEven(int n)
{
    static int sum = 0;

    sum += n;
    printf ("Sum = %i\n", sum);

    return (n % 2 == 0);
}
```

Questions on the Previous Program

- ▶ What is the purpose of the **#define** statement and who does it create work for:
 - ▶ The pre-processor
 - ▶ The compiler
 - ▶ The linker
 - ▶ The loader
- ▶ What is the purpose of using **static** in a function prototype?
- ▶ What is the purpose of using the **static** in front of a variable name within a function?
- ▶ What does **unsigned** mean?
- ▶ What does “%5u” do?

What is the Output Now?

```
#include <stdio.h>

#define MAX_NUMS 5

static unsigned int isEven(int n);

int main()
{
    int i;

    for (i = 1; i <= MAX_NUMS; ++i)
    {
        if (isEven(i))
        {
            printf ("Value = %5u %5u\n", isEven(i), i);
        }
    }
    return 0;
}
```

```
static unsigned int isEven(int n)
{
    static int sum = 0;

    sum += n;
    printf ("Sum = %i\n", sum);

    return (n % 2 == 0);
}
```

What is the Output?

```
#include <stdio.h>

#define ARRAY_SIZE 1024

void foo(int arr[], int len, char *str);

int main()
{
    int array[ARRAY_SIZE];
    int index = 0;

    for( ; index < ARRAY_SIZE; index++)
    {
        array[index] = index;
    }

    foo(array, ARRAY_SIZE, "Hello there world!");
    return 0;
}

void foo(int arr[], int len, char *str)
{
    int index = 0;
    for( ; index < len; index++)
    {
        printf("%15d\t", arr[index]);
    }
    printf("\n%s\n", str);
}
```

Questions on the Previous Program

- ▶ What is the output of the program?
- ▶ What is the purpose of `#define`?
- ▶ What does
`for(; index < ARRAY_SIZE; index ++)`
mean?
- ▶ Write the previous program in Geany and compile and execute it.
- ▶ Once you know it compiles, tar it up and copy it to Zeus.
 - ▶ Name it `CS300_0_PUNetID.tar.gz`
- ▶ Test your program on Zeus.
- ▶ Use the submit script to turn it in.

C Topics

- ▶ `printf`
- ▶ `scanf`
- ▶ `#define`
- ▶ `static`
 - ▶ When used with functions
 - ▶ When used with variables
- ▶ `unsigned`