

## CITS2230 : C through Examples

### Example 1: The bare minimum

```
#include<stdio.h>

int main(){
    printf("Hello World\n");
}
```

Hello World

## Example 2: Adding two integers

```
#include<stdio.h>

int main(){
    int i=12;
    int j=10;
    int sum=0;
    sum=i+j;
    printf("Sum=%d\n",sum);
}
```

Sum=22

### Example 3:Read and Add

```
#include<stdio.h>

int main(){
    int i=0;
    int j=0;
    int sum=0;

    scanf("%d %d",&i,&j);
    sum=i+j;
    printf("Sum=%d\n",sum);
}
```

```
10 12
Sum=22
```

## Example 4: Add in another Function

```
#include<stdio.h>

int Sum(int m, int n)
{
    int sum=0;
    sum=m+n;
    return sum;
}

int main()
{

    int i=0;
    int j=0;
    int sum=0;

    scanf("%d %d",&i,&j);
    sum= Sum(i,j);
    printf("Sum=%d\n",sum);
}
```

```
10 20
Sum=30
```

## Example 5: Array and For Loop

```
#include<stdio.h>

int main()
{
    int my_array[5];
    int i=0;

    for(i=0;i<5;i++)
        scanf("%d",&my_array[i]);

    for(i=0;i<5;i++)
        printf("myarray[%d]=%d\n",i,my_array[i]);

}

10 20 30 40 50
myarray[0]=10
myarray[1]=20
myarray[2]=30
myarray[3]=40
myarray[4]=50
```

## Example 6: While Loop

```
#include<stdio.h>

int main()
{
    int my_array[5];
    int i=0;

    while(i<5){
        scanf("%d",&my_array[i]);
        i++;
    }
    i=0;
    while(i<5){
        printf("myarray [%d]=%d\n",i,my_array[i]);
        i++;
    }
}

10 20 30 40 50
myarray[0]=10
myarray[1]=20
myarray[2]=30
myarray[3]=40
myarray[4]=50
```

## Example 7:Do - While Loop

```
#include<stdio.h>

int main()
{
    int my_array[5];
    int i=0;

    do{
        scanf ("%d",&my_array[i]);
        i++;
    }while(i<5);

    i=0;
    do {
        printf("myarray [%d]=%d\n",i,my_array[i]);
        i++;
    }while(i<5);
}

10 20 30 40 50
myarray[0]=10
myarray[1]=20
```

```
myarray[2]=30
```

```
myarray[3]=40
```

## Example 8: Simple Swapping

```
#include<stdio.h>

int main()
{

    int i=0;
    int j=0;
    int temp =0;

    scanf("%d %d",&i,&j);

    printf("i =%d, j=%d\n", i,j);

    temp = i;
    i = j;
    j = temp;

    printf("i =%d, j=%d\n", i,j);
}
```

```
10 20
i =10, j=20
i =20, j=10
```

## Example 9:Pointers

```
#include<stdio.h>

int Exchange(int *m, int *n)
{
    int temp=0;
    temp = *m;
    *m=*n;
    *n=temp;
}

int main()
{
    int i=0;
    int j=0;
    int temp =0;
    scanf("%d %d",&i,&j);
    printf("i =%d, j=%d\n", i,j);
    Exchange(&i, &j);
    printf("i =%d, j=%d\n", i,j);
}
```

```
10 20
i =10, j=20
```

$i = 20, j = 10$

## Example 10:Memory Allocation

```
#include<stdio.h>
#include<malloc.h>

int main(){

    int *i;
    int j;

    i= (int *)malloc(sizeof(int));
    scanf("%d %d",i,&j);
    printf("i=%d, j=%d\n",*i,j);
}
```

```
10 20
i=10, j=20
```

## Example 11: Arithmetic with Pointers

```
#include<stdio.h>
#include<malloc.h>

int main(){

    int *i;
    int j;
    int sum=0;

    i= (int *)malloc(sizeof(int));
    scanf("%d %d",i,&j);

    sum=*i+j;

    printf("i=%d, j=%d, sum=%d\n",*i,j,sum);
}

10 20
i=10, j=20, sum=30
```

## Example 12: Arrays are Pointers too

```
#include<stdio.h>
#include<malloc.h>

int main(){

    int i=0;
    int sum=0;
    int my_array[5];

    for(i=0;i<5;i++)
        scanf("%d",my_array+i);

    for(i=0;i<5;i++)
        sum+=my_array[i];

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

```
10 20 30 40 50
sum=150
```