Assignment 2

Embedded Systems Course

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سكشن : 2

قسم هندسة الحاسبات ونظم التحكم

كلية الهندسة جامعة المنصورة

Code 1:

```c
// This Project is Prepared by Ayman Mohamed Nabil - Section 2
#include <stdio.h>

#define GET_BIT(num,bit_index) (num & 1<<bit_index)!=0

int main()
{
    unsigned int x=0b01001100110011001100110011001100;
    int i; // ANSI C
    for(i=0;i<32;i++)
    {
        printf("bit index %d = %d\n",i,GET_BIT(x,i));
    }
}
```

The Proof

```
engay@Ayman MINGW64 ~/OneDrive/Desktop/Lab2
$ ./code1.exe
bit index 0 = 0
bit index 1 = 0
bit index 2 = 1
bit index 3 = 1
bit index 4 = 0
bit index 5 = 0
bit index 6 = 1
bit index 7 = 1
bit index 8 = 0
bit index 9 = 0
bit index 10 = 1
bit index 11 = 1
bit index 12 = 0
bit index 13 = 0
bit index 14 = 1
bit index 15 = 1
bit index 16 = 0
bit index 17 = 0
bit index 18 = 1
bit index 19 = 1
bit index 20 = 0
bit index 21 = 0
bit index 22 = 1
bit index 23 = 1
bit index 24 = 0
bit index 25 = 0
bit index 26 = 1
bit index 27 = 1
bit index 28 = 0
bit index 29 = 0
bit index 30 = 1
bit index 31 = 0
```

Code 2:

```c
// This Project is Prepared by Ayman Mohamed Nabil - Section 2
#include <stdio.h>

#define array_sum(variable_name,array_name,lenght);  typeof(array_name[0])
variable_name=0;\
int i=0;\
while(i!=lenght)\
{variable_name+=array_name[i];\
i++;\
}\
\

int main()
{
    int arr[]={1,2,3,4};
    array_sum(sum,arr,sizeof(arr)/sizeof(arr[0]));
    printf("Sum of arr = %d",sum);
}
```

The Proof

```
engay@Ayman MINGW64 ~/OneDrive/Desktop/Lab2
$ ./code2.exe
Sum of arr = 10
```

Code 3:

```c
// This Project is Prepared by Ayman Mohamed Nabil - Section 2
#include <stdio.h>

int main()
{
    int num,count=0;
    printf("Enter the number that you want to check = ");
    fflush(stdout);
    scanf("%d",&num);
    while(num!=0)
    {
        if(num&1)
        {
            count++;
        }
        num>>=1;
    }
    printf("no. of ones = %d",count);
}
```

The Proof

```
engay@Ayman MINGW64 ~/OneDrive/Desktop/Lab2
$ ./code3.exe
Enter the number that you want to check = 7
no. of ones = 3
```

Code 4:

```c
// This Project is Prepared by Ayman Mohamed Nabil - Section 2
#include <stdio.h>

int main()
{
    printf("Enter your 8-bits number here (in Binary) : ");
    fflush(stdout);
    char s[9];
    gets(s);
    fflush(stdin);
    char *e=s;
    e+=8;
    while(s<=e)
    {
        printf("%c",*e);
        e--;
    }
}
```

The Proof

```
engay@Ayman MINGW64 ~/OneDrive/Desktop/Lab2
$ ./code4.exe
Enter your 8-bits number here (in Binary) : 10001101
10110001
```