

Assignment 1

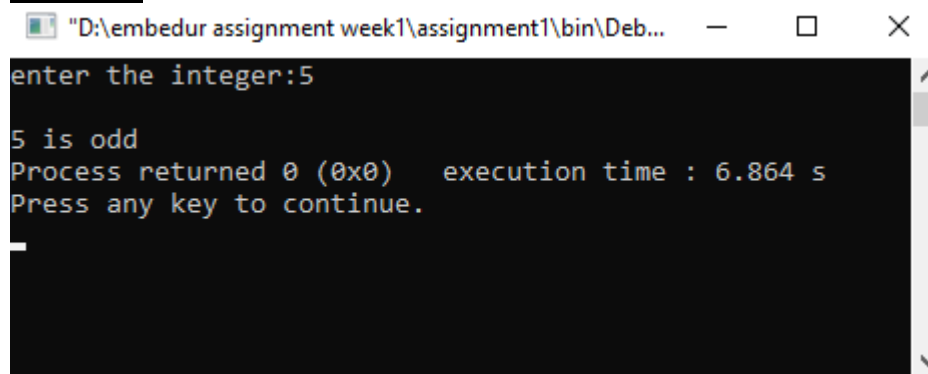
1. Write a C program to determine the given number is odd or even using Bitwise operators

CODE:

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

int main()
{
    int number;
    printf("enter the integer:");
    scanf("%d",&number);
    if(number&1)
        printf("\n%d is odd",number);
    else
        printf("\n%d is even",number);
    return 0;
}
```

OUTPUT:



```
enter the integer:5
5 is odd
Process returned 0 (0x0)   execution time : 6.864 s
Press any key to continue.
```

2. Write a C program to count the number of bits set in a number.

CODE:

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

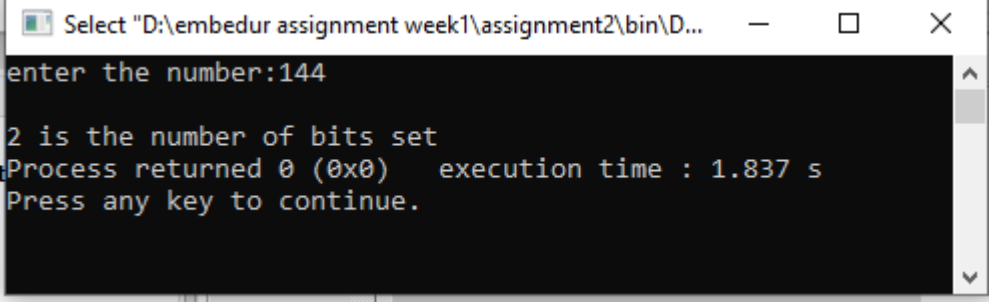
int main()
{
    int n,count=0;
    printf("enter the number:");
    scanf("%d",&n);
    for(int i=0;i<32;i++)
    {
        int shift=n>>i;
```

```

        if(shift&1)
        {
            count=count+1;
        }
    }
    printf("\n%d is the number of bits set",count);
    return 0;
}

```

OUTPUT:



```

Select "D:\embedur assignment week1\assignment2\bin\D...
enter the number:144
2 is the number of bits set
Process returned 0 (0x0)   execution time : 1.837 s
Press any key to continue.

```

3. Write a C program to swap two numbers. Use a function pointer to do this operation.

CODE:

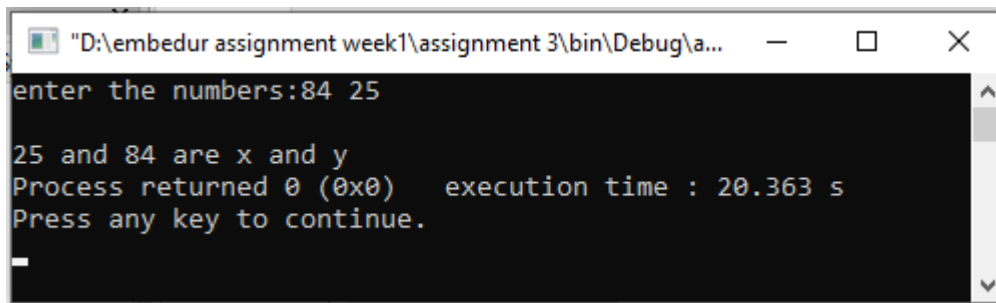
```

#include <stdio.h>
#include <stdlib.h>
int swap(int* a,int* b)
{
    int temp;
    temp=*a;
    *a=*b;
    *b=temp;
}

int main()
{
    int x,y;
    int (*fp)(int*,int*);
    printf("enter the numbers:");
    scanf("%d %d",&x,&y);
    fp=swap;
    (*fp)(&x,&y);
    printf("\n%d and %d are x and y",x,y);
    return 0;
}

```

OUTPUT:

A screenshot of a Windows command prompt window. The title bar shows the file path "D:\embedur assignment week1\assignment 3\bin\Debug\...". The command prompt displays the following text: "enter the numbers:84 25", "25 and 84 are x and y", "Process returned 0 (0x0) execution time : 20.363 s", and "Press any key to continue." followed by a cursor on a new line.

```
"D:\embedur assignment week1\assignment 3\bin\Debug\...
enter the numbers:84 25

25 and 84 are x and y
Process returned 0 (0x0) execution time : 20.363 s
Press any key to continue.
_
```

4. . Write an equivalent pointer expression for fetching the value of array element $a[i][j][k][2]$

ANSWER: $*(*(a+i)+j)+k$

5. Write a C program to Multiply two matrix ($n*n$) using pointers.

CODE:

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

int main()
{
    int a1[3][3],a2[3][3],res[3][3];
    printf("enter array 1:");
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++)
            scanf("%d",&*(a1+i+j));
    }
    printf("enter array 2:");
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++)
            scanf("%d",&*(a2+i+j));
    }
    printf("array 1:\n");
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++)
            printf("%d\t",&*(a1+i+j));
        printf("\n");
    }
    printf("array 2:\n");
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++)
            printf("%d\t",&*(a2+i+j));
```

```

        printf("\n");
    }
    printf("\n");
    multiply(a1,a2);
    return 0;
}
void multiply(int a1[][3],int a2[][3])
{
    int mul[3][3],sum;
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++)
        {
            sum=0;
            for(int k=0;k<3;k++)
            {
                sum+=((*a1+i+k))*((*a2+k+j));
            }
            (*(mul+i+j)=sum;
        }
    }
    for(int l=0;l<3;l++)
    {
        for(int m=0;m<3;m++)
        {
            printf("%d\t",mul[l][m]);
        }
        printf("\n");
    }
}

```

OUTPUT:

```
"D:\embedur assignment week1\assignment5(original)\bi...
6
7
8
9
1
enter array 2:9
8
7
6
5
4
3
2
1
array 1:
2      3      4
5      6      7
8      9      1
array 2:
9      8      7
6      5      4
3      2      1

48      39      30
102     84      66
129     111     93
```

6. Find the output of the following // Consider the compiler is 32-bit machine

```
#include <stdio.h>
typedef struct
{
    int A;
    char B;
    char C;
} InfoData;
int main(int argc, char *argv[])
{
    //Calculate size of structure
    printf("\n Size of Structure = %d\n\n", sizeof(InfoData));
    return 0;
}
```

ANSWER: size of structure is 8

7. Find the output of the following // Consider the compiler is 32-bit machine

```
#include <stdio.h>
typedef struct
{
    char A;
    double B;
    char C;
} InfoData;
int main(int argc, char *argv[])
{
    //Calculate size of structure
    printf("\n Size of Structure = %d\n\n", sizeof(InfoData));
    return 0;
}
```

ANSWER: size of structure is 24

8. Find the output of the following // Consider the compiler is 32-bit machine

```
#include <stdio.h>
#include <stdint.h>
int main()
{
    unsigned int var = 0x12345678;
    unsigned int rev = 0;
    for (int i = 0; i < 8; i++)
    {
        rev = (rev << 4) | ((var >> (4 * i)) & 0xF);
    }
    printf("%X", rev);
    return 0;
}
```

ANSWER: 87654321

