LAB-1

Learning Basic about Decimal to Binary and Binary to Decimal

Theory

The binary number system uses radi X2. The two digit symbols are 0 and 1. The decimal number is an integer number. To convert decimal to binary decimal number is divided by 2 and remainder is taken. And this is repeted until the number is not 0. The binary number is converted to decimal by multiplying the number with 2 with the power of number assigned to each binary symbols or numbers. Each number is seperately multiplied and added.

Source Code

```
#include <stdio.h>
#include <conio.h>
#include <math.h>
int binaryToDecimal(long binarynum) : Function.
{
  int decimalnum = 0, temp = 0, reminder;
  while (binarynum != 0)
  {
    remainder = binarynum %10;
    binarynum = binarynum /10;
    decimalnum = decimalnum + reminder * pow(2,temp);
    temp++;
  }
  return decimalnum;
}
int main()
{
    long binarynum, decimalnum;
    printf("Enter a binary number: ");
    scanf("%d", &binarynum);
    printf("Equivalent decimal number is: %d",
        binaryToDecimal(binarynum);
    return 0;
}
```

Function Call.

Output

Enter binary number : 10 10

Equivalent decimal number is : 10

```
// Decimal to Binary
#include <stdio.h>
#include <conio.h>
#include <math.h>
log decimal To Binary (long n)
{
   int remainder;
   long binary = 0 ; i = 1;
   while (n != 0)
   {
    remainder = n % 2
     n = n / 2;
    binary = binary + (remainder * i);
     i = i * 10;
   }
  return binary;
}
int main()
{
  long integer num;
  printf ("Enter a number : ");
  scanf ("%d ", & Integernum );
  printf ("Equivalent binary number is %d ",
        decimal To Binary (Integernum);
  getch();
}
```

Output

Enter a number : 10

Equivalent binary number is : 10 11

Conclusion

Hence, from this lab, we are able to convert binary to decimal and also decimal to binary number.

# LAB-2

Addition of two unsigned number and subtraction of two unsigned integer binary number.

## Theory

Binary addition of two unsigned number follows some simple rules as shown:

| Binary Addition Table | | | |
|---|---|---|---|
| X | Y | sum | Carry |
| 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 1 |

Binary subtraction of unsigned number also have some rules as shown below:

| Binary Subtraction Table | | | |
|---|---|---|---|
| X | Y | Subtract | Borrow |
| 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 |

// Subtraction of two usigned integer binary number

```
#include <stdio.h>
#include <conio.h>
int main()
{
  int numa [8], numb [8], diff [8];
  int i, n=3
  printf (" Enter first number : ");
  for (i=0; i<n ; i++)        i<=n
   {
    scanf ("%d ", &numa[i]);
   }
  printf (" Enter second number : ");
  for (i=0 ; i<n ; i++)        i<=n
   {
    scanf ("%d", &numb [i]);
   }
  for (i=3 ; i>=0 ; i--)
  {
    diff [i] = numa [i] - numb [i];
    if (diff [i]<0)
    {
      numa [i-1] = numa [i-1] - 1;
    }
    diff [i] = fabs (diff [i] %.2);
   }
  printf ("\n Difference is : ");
  for (i=0 ; i<4 ; i++ )        i<=n
  {
    printf (" %d ", diff [i]);
   }
    return 0;
}
```

Output

```
Enter first number : 1010
Enter second number : 1001
Difference is : 0001
```