

Number system

Assignment Solutions



Q1 - Print the sum of the first 5 decimal numbers from 1 to 5 in binary format.

Sample Input: 1,2,3,4,5

Sample Output: 1111

Code:

```
#include <iostream>
using namespace std;
int main()
{
    int sum=0;
    for(int i=1;i<=5;i++){
        sum=sum+i;
    }
    int ans = 0;
    int pw = 1;
    while (sum > 0) {
        int parity = sum % 2;
        ans += pw * parity;
        pw *= 10;
        sum /= 2;
    }
    cout << ans << endl;
}
```

```
9  #include <iostream>
10 using namespace std;
11 int main()
12 {
13     int sum=0;
14     for(int i=1;i<=5;i++){
15         sum=sum+i;
16     }
17     int ans = 0;
18     int pw = 1;
19     while (sum > 0) {
20         int parity = sum % 2;
21         ans += pw * parity;
22         pw *= 10;
23         sum /= 2;
24     }
25     cout << ans << endl;
26 }
```

1111

Q2 - Given a natural number, find the number of 0's in the binary representation of that number.

Note: Don't count the preceding zeros.

For example: 001001 has 2 zeros as the first two zeros from left are preceding zeros.

Sample Input: 9

Sample Output: 2

Explanation: As the binary representation of 9 is 1001

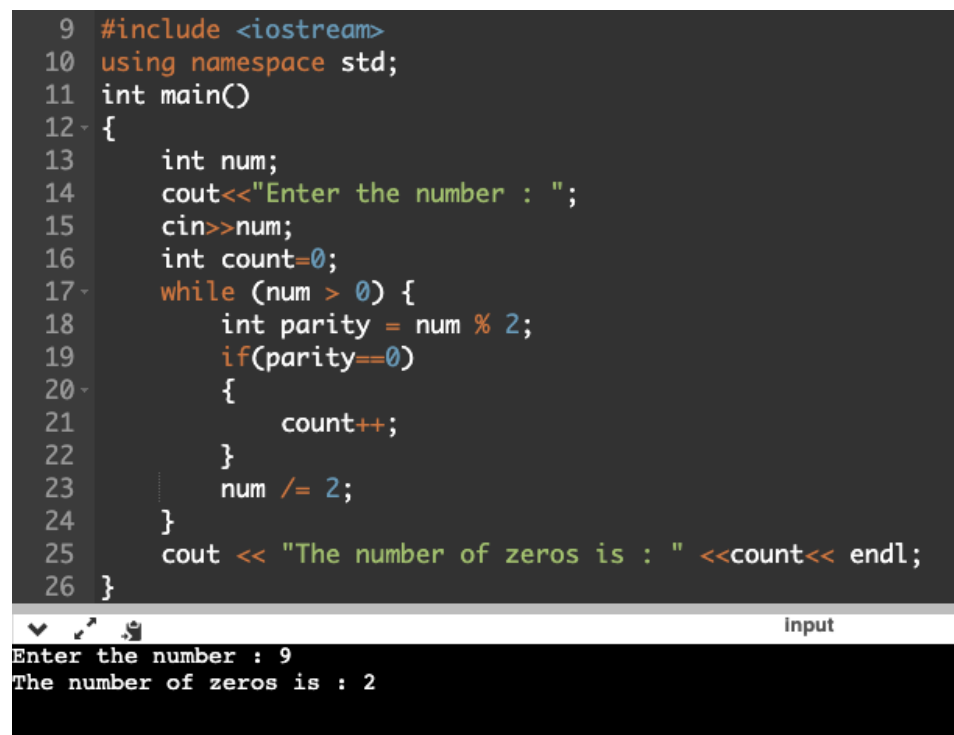
Sample Input: 6

Sample Output: 1

Explanation: As the binary representation of 6 is 0110

Code:

```
#include <iostream>
using namespace std;
int main()
{
    int num;
    cout<<"Enter the number : ";
    cin>>num;
    int count=0;
    while (num > 0) {
        int parity = num % 2;
        if(parity==0)
        {
            count++;
        }
        num /= 2;
    }
    cout << "The number of zeros is : " <<count<< endl;
}
```



```
9  #include <iostream>
10 using namespace std;
11 int main()
12 {
13     int num;
14     cout<<"Enter the number : ";
15     cin>>num;
16     int count=0;
17     while (num > 0) {
18         int parity = num % 2;
19         if(parity==0)
20         {
21             count++;
22         }
23         num /= 2;
24     }
25     cout << "The number of zeros is : " <<count<< endl;
26 }
```

Input

Enter the number : 9

The number of zeros is : 2

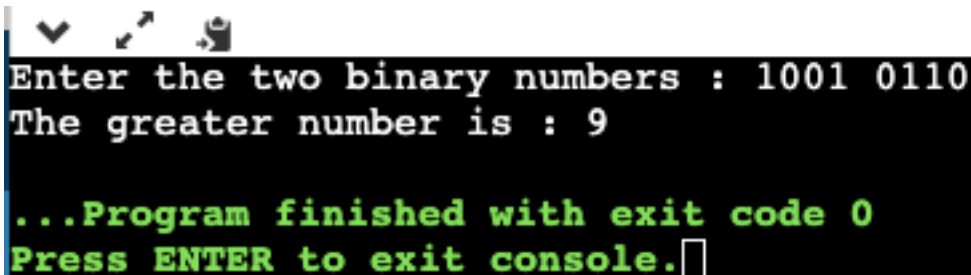
Q3 - Given two binary numbers, return the greatest of these numbers in decimal format.

Sample Input: 1001 and 0100

Sample Output: 9

Code:

```
#include <iostream>
using namespace std;
int main()
{
    int num1;
    int num2;
    cout<<"Enter the two binary numbers : ";
    cin>>num1>>num2;
    int pw = 1;
    int dec1=0;
    int dec2=0;
    while (num1 > 0) { //converting num1 to decimal
        int units_digit = num1 % 10;
        dec1 += pw * units_digit;
        num1 /= 10;
        pw *= 2;
    }
    pw=1;
    while (num2 > 0) { //converting num2 to decimal
        int units_digit = num2 % 10;
        dec2 += pw * units_digit;
        num2 /= 10;
        pw *= 2;
    }
    if(dec1>dec2) //comparing the decimal numbers dec1 and dec2
    {
        cout<<"The greater number is : "<<dec1;
    }else{
        cout<<"The greater number is : "<<dec2;
    }
}
```



Enter the two binary numbers : 1001 0110
The greater number is : 9
...Program finished with exit code 0
Press ENTER to exit console.