Number system

Assignment Solutions

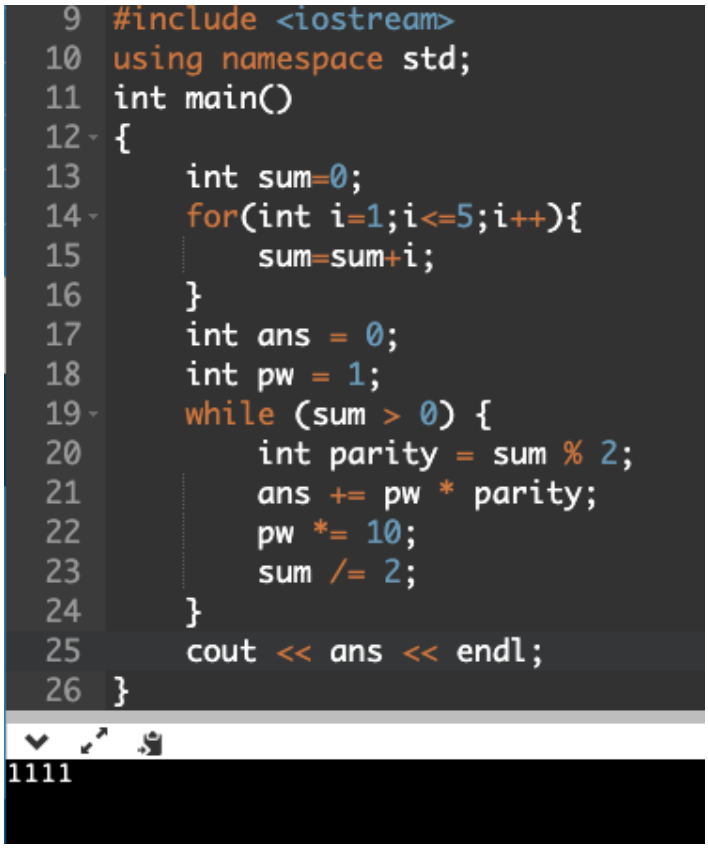
PW SKILLS

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;
}
```



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;
}
```

```
#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;
}
```

```
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;
      }

}
```