~\Desktop\CPROGRAMMES\A1Q1.c

```c
#include<stdio.h>
#include<math.h>
void dec(int a){
int div=0,d,n=0,c=0,z=0;
while(a!=0){
d=a%2;
div=div*10+d;
a=a/2;
z=z+d;
if(z==0) //counts trailing zero of the binary number
c++;
}
while(div!=0){
    d=div%10;
    n=n*10+d;
    div=div/10;
}
double t=pow(10,c);
n=n*t;
printf("Binary is %d",n);
}

void bin(int a){
int d,sum=0,i=0,temp=a;double s;
while(temp!=0){
    d=temp%10;
    temp=temp/10;
}
while(a!=0){
    d=a%10;
    s=pow(2,i);
    sum=sum+d*s;
    a=a/10;
    i++;
}
printf("Decimal is %d",sum);
}
int main(){

    //Q1
    int orgnum,num,sum=0,count=0;
    printf("enter the number to check whether its amstrong or not:");
    scanf("%d",&num);
    orgnum=num;
    while(num!=0){
        num=num/10;
        count++;
    }
    num=orgnum;
    while(num!=0){
        int r=num%10;
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52          sum=sum+pow(r,count);
53          num=num/10;
54      }
55      if(sum==orgnum){
56          printf("number is amstrong");
57      }
58      else{
59          printf("not amstrong");
60      }
61
62      //Q2
63      int a,b;
64      printf("enter the smallest number between 2 numbers:\n");
65      scanf("%d",&a);
66      printf("enter the largest number between 2 numbers:\n");
67      scanf("%d",&b);
68      while(b!=0){
69          int c=a%b;
70          a=b;
71          b=c;
72      }
73      printf("hcf is %d",a);
74
75      //Q4
76      int a,b;
77      printf("provide two numbers a and b:");
78      scanf("%d %d",&a,&b);
79      //1st method:
80      int c;
81      c=a;
82      a=b;
83      b=c;
84      printf("a:%d,b:%d",a,b);
85      //2nd method:
86      a=a+b;
87      b=a-b;
88      a=a-b;
89      printf("a:%d,b:%d",a,b);
90      //3rd method
91      a=a*b;
92      b=a/b;
93      a=a/b;
94      //4th method
95      a=a^b;
96      b=a^b;
97      a=a^b;
98
99      //Q5
100     int num,sum=0;
101     printf("enter the number to check that it is a perfect square or not");
102     scanf("%d",&num);
103     for(int i=1;i<=num;i++){
104         if(num%i==0){
105             sum+=i;
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        }
    }
    if(sum==num){
        printf("perfect square");
    }
    else{
        printf("not perfect square");
    }

    //Q6
    int x,y;
    printf("enter the x and y coordinate");
    scanf("%d %d",&x,&y);
    if(x==0&&y==0){
        printf("doesn't lie in any quadrant");
    }
    else if(x>0&&y>0){
        printf("1 quadrant");
    }
    else if(x<0&&y>0){
        printf("2 quadrant");
    }
    else if(x<0&&y<0){
        printf("3 quadrant");
    }
    else{
        printf("4 quadrant");
    }

    //Q7
    int num,ch;
    printf("Enter your number: ");
    scanf("%d",&num);
    printf("1. Decimal to Binary\n2. Binary to Decimal\nEnter your choice: ");
    scanf("%d",&ch);
    switch(ch){
        case 1:
        dec(num);
        break;
        case 2:
        bin(num);
        break;
        default:
        printf("Invalid Choice!");
    }

    //Q8
    int n;
    printf("enter the number of rows");
    scanf("%d",&n);
    for(int i=1;i<=n;i++){
        for(int j=1;j<=i;j++){
            if((i+j)%2==0){
                printf("1");
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            }else{
                printf("0");
            }

        }
        printf("\n");

    }
    //Q9
    int n,spaces;
    printf("enter the number of rows:");
    scanf("%d",&n);
    if(n%2==0){
        spaces=n+2;
    }
    else{
        spaces=n+3;
    }
    for(int i=1;i<=n;i++){
        for(int j=1;j<=i;j++){
            if((i+j)%2==0){
                printf("0");
            }
            else{
                printf("1");
            }

        }
        for(int j=1;j<=spaces;j++){

            printf(" ");


        }
        spaces=spaces-2;
        for(int j=1;j<=i;j++){
            if(j%2==0){
                printf("1");
            }
            else{
                printf("0");
            }
        }
        printf("\n");
    }

    //Q10
    int rows, coef = 1;
    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (int i = 0; i < rows; i++) {
        for (int space = 1; space <= rows - i; space++) {
            printf("  ");
        }
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        for (int j = 0; j <= i; j++) {
            if (j == 0 || i == 0)
                coef = 1;
            else
                coef = coef * (i - j + 1) / j;
            printf("%4d", coef);
        }
        printf("\n");
    }
}
```