

```

1  /*****
2
3  " **** C PROGRAM FR DRAWING PASCALS TRIANGLE WITHOUT USEING FORMULA *** "
4  -----
5
6  Here is the example to Pascals triangle for (a+b)^3
7  r=3
8
9  row-0 (i=0)           1           //printing starts from (r-0)th (3rd) index
10 ends at (r+0)th (3rd)
11 row-1 (i=1)          1   1       //printing starts from (r-1)th (2rd) index
12 ends at (r+1)th (4th)
13 row-2 (i=2)           1   2   1   //printing starts from (r-2)th (1st) index
14 ends at (r+2)th (5th)
15 row-3 (i=3)           1   3   3   1 //printing starts from (r-3)th (0th) index
16 ends at (r+3)th (6th)
17
18 indicies:              0 1 2 3 4 5 6
19
20 Thus in ith row: //printing will starts from (r-i)th index ends at (r+i)th index,
21 In between series coefficients will be print at even indices ie. r-i+0, r-i+2,
22 r-i+3,...,r+i
23 At odd indicies space will be printed, same thing is operated in lines of code from 64
24 to 71
25
26 Also before (r-i)th index and after (r+i) th index spaces has to print in each ith row,
27 same thing is operated in lines of code from 57 to 60
28
29 *****/
30
31 #include <stdio.h>
32
33 int main()
34 {
35     int r,a,b,i,j,k,c;
36     int A[100],B[100];
37     for(i=0;i<100;i++)
38     {
39         A[i]=0; // To store coefficients of each row
40         B[i]=0; // To add 0 at start and end of previous row coefficients in order to
41                 find next row coefficients
42     }
43
44     printf("Enter the the number of rows\n");
45     scanf("%d",&r); //To store number of rows, basically power of (a+b)^r
46
47     for(i=0;i<=r;i++)
48     {
49         if(i==0) //if power is 0 i.e. (a+b)^0
50         {
51             A[0]=1;
52         }
53         else //if power is greater than 0 i.e. (a+b)^r
54         {
55             for(j=0;j<=i;j++)
56             {
57                 A[j]=B[j]+B[j+1]; //To find next now coefficients using previous row
58                                     coefficients
59             }
60         }
61
62         c=0; //used for printing elements of a row (A[]) serially
63         for(k=0;k<=2*r;k++) //2*r is the total number of entities to be print
64                             including spaces in each row
65         {
66             if((k<r-i)|| (k>r+i)) //when in ith row spaces have to print at start and
67                                     end of row elements
68             {
69                 printf(" ");
70             }
71         }
72     }
73 }

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60     }
61     else
62     { //actually in each row from index r-i to r+i numbers exists if you
        notice the pattern
63         //To print those patterns we use "if((k>=r-i)&&(k<=r+i))" this check
64         if((k-r+i)%2==0) //in that pattern elements have to be print only at
            even index in you notice
65         {
66             printf("%d",A[c++]);
67         }
68         else // at odd places space have to be print in you notice
69         {
70             printf(" ");
71         }
72     }
73 }
74 printf("\n"); //To switch printing to next row
75
76 B[0]=0;
77 for(k=1;k<=i+1;k++) //used for saving B[] by including 0 at start and end for
    estimating next row elements
78 {
79     B[k]=A[k-1];
80 }
81 B[k+1]=0;
82
83 }
84
85 return 0;
86 }

```