SOLUTION BOOK

❤️ From SIDDHARTH SINGH

SWITCH

1) **Program to Make a Simple Calculator**

CODE:

```
# include <iostream>
using namespace std;

int main() {
    char op;
    float num1, num2;

    cout << "Enter operator: +, -, *, /: ";
    cin >> op;

    cout << "Enter two operands: ";
    cin >> num1 >> num2;

    switch(op) {
        case '+':
            cout << num1 << " + " << num2 << " = " << num1 + num2;
            break;

        case '-':
            cout << num1 << " - " << num2 << " = " << num1 - num2;
            break;

        case '*':
            cout << num1 << " * " << num2 << " = " << num1 * num2;
            break;

        case '/':
            cout << num1 << " / " << num2 << " = " << num1 / num2;
            break;

        default:
```

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```
            // If the operator is other than +, -, * or /, error message is shown
            cout << "Error! operator is not correct";
            break;
    }

    return 0;
}
```

Output

```
Enter operator either + or - or * or divide : -
Enter two operands: 3.4 8.4
3.4 - 8.4 = -5.0
```

PATTERN

1) **Solid Rectangular Star**

CODE:

```
#include <iostream>
using namespace std;

//Function to print solid rectangle
void solid_rectangle(int n, int m)
{
int i, j;
for (i = 1; i <= n; i++)
{
for (j = 1; j <= m; j++)
{
cout << “*”;
}
cout << endl;
}
}

int main()
{
int rows, columns;
cout << “nEnter the number of rows : “;
```

```
cin >> rows;
cout << “nEnter the number of columns : “;
cin >> columns;
cout << endl;
solid_rectangle(rows, columns);
return 0;
}
```

2) **Hollow Rectangular Star**

CODE:

```
#include <iostream>
using namespace std;
//Function to print hollow rectangle*/
void hollow_rectangle(int n, int m)
{
int i, j;
for (i = 1; i <= n; i++)
{
for (j = 1; j <= m; j++)
{
if (i==1 || i==n || j==1 || j==m)
cout << “*”;
else
cout << ” “;
}
cout << endl;
}

}
int main()
{
int rows, columns;
cout << “nEnter the number of rows : “;
cin >> rows;
cout << “nEnter the number of columns : “;
cin >> columns;
cout << endl;
```

```
hollow_rectangle(rows, columns);
return 0;
}
```

3) **Half Pyramid Star Pattern**

CODE:

```
#include <iostream>
using namespace std;

int main()
{
int i, j,n;
cin >> n;
for(i = 0; i < n; i++)
{
for(j = 0; j <= i; j++)
{
cout << “*”;
}
cout << endl;
}
return 0;
}
```

4) **Inverted Half Pyramid**

```
#include <iostream>
using namespace std;

int main()
{
int i, j, n, k = 0;
cin >> n;

for(i = n; i >= 1; –i)
{
for(j = 1; j <= i; ++j)
{
cout << “* “;
}
cout << endl;
}
```

```
return 0;
}
```

5) **Full Pyramid Pattern**

CODE:

```
#include <iostream>
using namespace std;

int main()
{
int i, j, n, k = 0;
cin >> n;

for(i = 1; i <= n; ++i, k = 0)
{
for(j = 1; j <= n – i; ++j)
{
cout << ” “;
}

while(k != 2 * i-1)
{
cout << “* “;
++k;
}
cout << endl;
}

return 0;
}
```

6) **Inverted Full Pyramid**

CODE:

```
#include <iostream>
using namespace std;

int main()
{
int i, j, n, k = 0;
cin >> n;

for(i=n; i>=1; –i)
```

```
{
for(j=0; j < n-i; ++j)
{
cout << " ";
}

for(j=i; j <= 2*i-1; ++j)
{
cout << "* ";
}

for(j=0; j < i-1; ++j)
{
cout << "* ";
}

cout << endl;
}

return 0;
}
```

7) Hollow Full Pyramid Star Pattern

CODE:

```
#include <iostream>
using namespace std;
void printPattern(int);
int main()
{
int n;
cin >> n;
int i, j, k = 0;
for (i = 1; i <= n; i++)
{
for (j = i; j < n; j++) {
cout << " ";
}
while (k != (2 * i – 1)) {
if (k == 0 || k == 2 * i – 2)
```

```
cout << "*";
else
cout << " ";
k++;
;
}
k = 0;
cout << endl; // print next row
}
for (i = 0; i < 2 * n – 1; i++) {
cout << "*";
}
}
```

8) **Half pyramid pattern using numbers**

CODE:

```
#include <iostream>
using namespace std;

int main()
{
int i, j,n;
cin >> n;
for(i = 1; i <= n; i++)
{
for(j = 1; j <= i; j++)
{
cout << j << " ";
}
cout << endl;
}
return 0;
}
```

9) **Pascal Triangle**

CODE:

```
#include<iostream>
using namespace std;
int main()
{
int rows, coef = 1, space, i, j;
cout << "\nEnter the number of rows : ";
```

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```
cin >> rows;
cout << endl;

for(i=0; i<rows; i++)
{
for(space=1; space <= rows-i; space++)
cout << " " ;

for(j=0; j <= i; j++)
{
if (j==0 || i==0)
coef = 1;
else
coef = coef*(i-j+1)/j;

cout << coef << " ";
}
cout << endl;
cout << endl;
}

return 0;
}
```