

Nested Control Structures

1. What does the following program print?

```
#include <iostream>
#include <iomanip>
using namespace std;
int main()
{
    for ( int r = 1; r <= 12; r++ ) {
        for ( int c = 1; c <= 12; c++ )
            cout << setw(4) << r*c;
        cout << endl;
    }

    return 0;
}
```

Answer:

```
1  2  3  4  5  6  7  8  9 10 11 12
2  4  6  8 10 12 14 16 18 20 22 24
3  6  9 12 15 18 21 24 27 30 33 36
4  8 12 16 20 24 28 32 36 40 44 48
5 10 15 20 25 30 35 40 45 50 55 60
6 12 18 24 30 36 42 48 54 60 66 72
7 14 21 28 35 42 49 56 63 70 77 84
8 16 24 32 40 48 56 64 72 80 88 96
9 18 27 36 45 54 63 72 81 90 99 108
10 20 30 40 50 60 70 80 90 100 110 120
11 22 33 44 55 66 77 88 99 110 121 132
12 24 36 48 60 72 84 96 108 120 132 144
Press any key to continue
```

2. What does the following program print?

```
#include <iostream>
#include <iomanip>
using namespace std;
int main()
{
    for ( int r = 1; r <= 12; r++ ) {
        for ( int c = 1; c <= 12; c++ )
        {
            cout << setw(4) << r*c;
            if ( c > r )
                break;
        }
        cout << endl;
    }

    return 0;
}
```

Answer:

```

1      2
2      4      6
3      6      9      12
4      8      12      16      20
5      10     15     20     25     30
6      12     18     24     30     36     42
7      14     21     28     35     42     49     56
8      16     24     32     40     48     56     64     72
9      18     27     36     45     54     63     72     81     90
10     20     30     40     50     60     70     80     90     100     110
11     22     33     44     55     66     77     88     99     110     121     132
12     24     36     48     60     72     84     96     108     120     132     144
Press any key to continue

```

3. What does the following program print?

```

#include <iostream>
#include <iomanip>
using namespace std;
int main()
{
    for ( int r = 1; r <= 12; r++ ) {
        for ( int c = 1; c <= 12; c++ )
        {
            cout << setw(4) << '#';
            if ( c >= r )
                break;
        }
        cout << endl;
    }

    return 0;
}

```

Answer:

```

#
# #
# # #
# # # #
# # # # #
# # # # # #
# # # # # # #
# # # # # # # #
# # # # # # # # #
# # # # # # # # # #
# # # # # # # # # # #
# # # # # # # # # # # #
# # # # # # # # # # # # #
Press any key to continue_

```

4. What does the following program print?

```

#include <iostream>
using namespace std;
int main()
{
    int row = 10, column;
    while ( row >= 1 ) {
        column = 1;
        while ( column <= 10 ) {

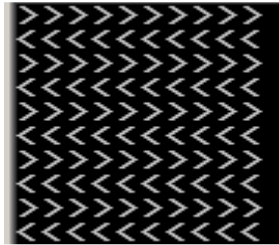
```

```

        cout << (row % 2 ? "<" : ">");
        ++column;
    }
    --row;
    cout << endl;
}
return 0;
}

```

Answer



5. What does the following program print?

```

#include <iostream>
using namespace std;
int main()
{
    for ( int i = 1; i <= 5; i++ ) {
        for ( int j = 1; j <= 3; j++ ){
            for ( int k = 1; k <= 4; k++ )
                cout << '*';
            cout << endl;
        }
        cout << endl;
    }
    return 0;
}

```

Answer

