

Practice problems on for loops, while loops, and nested loops: Write C++ programs to produce the output described in each of the following problems.

(1) The largest factor of a number (the user supplies the number):

number = 24, largest factor = 12

(2) An empty diamond of stars (the user supplies the height)

```
  *
 * *
*   *
*     *
*   *
 * *
  *
```

(3) An X of stars (the user supplies the height)

```
 *   *
 *  *
 * *
  *
 * *
 *  *
 *   *
```

(4) A pattern of 0's surrounded by *'s (the user supplies height and width)

```
*****
*0*0*0*0*0*
*****
*0*0*0*0*0*
*****
```

(5) A multiplication table (user supplies the size)

```
  1  2  3  4  5  6
-----
1*  1  2  3  4  5  6
2*  2  4  6  8 10 12
3*  3  6  9 12 15 18
4*  4  8 12 16 20 24
5*  5 10 15 20 25 30
6*  6 12 18 24 30 36
```

(6) Sum of the digits of a number (user supplies the number)

number = 245, sum of digits = 11