Lab 5.6.3.1 Arrays of pointers: matrices

Objectives

Familiarize the student with:

- Fixing errors in a program
- Integer numbers
- Printing on screen

Scenario

Write a program that displays the multiplication table of a given size. First, your program should ask the user about the size (height and weight are equal, so one number should be enough). If the size is greater than 20, the program should print the message: "Matrix too big." Then it should allocate a matrix and fill this matrix with appropriate values (remember: the element of [0][0] should store the multiplication result of 1 and 1). Then the program should print the multiplication table, 4 characters per cell. Finally, all memory must be freed. Your version of the program must print the same result as the expected output.

```
#include <stdio.h>

int main()
{
 /* your code */
 return 0;
}
```

Example input

```
5
```

Example output

```
    1   2   3   4   5
1   1   2   3   4   5
2   2   4   6   8  10
3   3   6   9  12  15
4   4   8  12  16  20
5   5  10  15  20  25
```

Example input

```
15
```

Example output

```
    1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
1   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
2   2   4   6   8  10  12  14  16  18  20  22  24  26  28  30
3   3   6   9  12  15  18  21  24  27  30  33  36  39  42  45
4   4   8  12  16  20  24  28  32  36  40  44  48  52  56  60
5   5  10  15  20  25  30  35  40  45  50  55  60  65  70  75
6   6  12  18  24  30  36  42  48  54  60  66  72  78  84  90
7   7  14  21  28  35  42  49  56  63  70  77  84  91  98 105
8   8  16  24  32  40  48  56  64  72  80  88  96 104 112 120
9   9  18  27  36  45  54  63  72  81  90  99 108 117 126 135
10 10  20  30  40  50  60  70  80  90 100 110 120 130 140 150
11 11  22  33  44  55  66  77  88  99 110 121 132 143 154 165
12 12  24  36  48  60  72  84  96 108 120 132 144 156 168 180
13 13  26  39  52  65  78  91 104 117 130 143 156 169 182 195
14 14  28  42  56  70  84  98 112 126 140 154 168 182 196 210
15 15  30  45  60  75  90 105 120 135 150 165 180 195 210 225
```

Example input

```
10
```

Example output

```
      1   2   3   4   5   6   7   8   9  10
  1   1   2   3   4   5   6   7   8   9  10
  2   2   4   6   8  10  12  14  16  18  20
  3   3   6   9  12  15  18  21  24  27  30
  4   4   8  12  16  20  24  28  32  36  40
  5   5  10  15  20  25  30  35  40  45  50
  6   6  12  18  24  30  36  42  48  54  60
  7   7  14  21  28  35  42  49  56  63  70
  8   8  16  24  32  40  48  56  64  72  80
  9   9  18  27  36  45  54  63  72  81  90
 10  10  20  30  40  50  60  70  80  90 100
```

Example input

```
25
```

Example output

```
Matrix too big.
```