S M O K I N G G U N™
I N T E R A C T I V E

Programmer – C++ Evaluation and Problem Question

Programmer – C++ Evaluation – Part 1 of 2

Specification:
Design and Implement a C++ program that implements the following:

- 2D Rectangle Class with floating point coordinates
    - Include methods for constructing an axis-aligned Rectangle with initial size and coordinates
    - Include a Copy constructor and an Assignment operator
- Algorithm that checks whether or not a 2D point is contained in an axis-aligned Rectangle
- Algorithm that checks whether or not two axis-aligned Rectangles intersect
- Simple test code that creates instances of your class and tests your implementation

Given:
You can use this class in your implementation. Feel free to modify this class as well.

```cpp
class Point2D
{
        float x;
        float y;
};
```

Programmer – Problem Question – Part 2 of 2

Multiples of 2, 3, 5
Consider a series in ascending order that only consists of numbers that can be factored by any combination of 2, 3 and 5. e.g. 1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 15....

For example the numbers 7 (prime), 13 (prime) or 14 (2*7, 7 is not a valid factor), are not in the above series. They are not factorable by 2, 3, 5.
The number 1 is included by definition.

For example, the number in position 18 would be 30:

1.	1
2.	2
3.	3
4.	4 = 2*2
5.	5
6.	6 = 2*3
7.	8 = 2*2*2
8.	9 = 3*3
9.	10=2*5
10.	12=2*2*3
11.	15=3*5
12.	16=2*2*2*2
13.	18=2*3*3
14.	20=2*2*5

15.   24=2*2*2*3
16.   25=5*5
17.   27=3*3*3
18.   30=2*3*5

Question:

Design an algorithm to find the number that occupies position 1500 in this series. NOTE: the correct answer is 859963392, use this to verify your algorithm.

Please be prepared to discuss your solution/solutions to this problem, as well as the steps you used to arrive at the solution.