FizzBuzz

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Question

Write a program that prints the numbers from 1 to 100. But for multiples of 3 print "Fizz" instead of the number and for the multiples of 5 print "Buzz". For numbers which are multiples of both 3 and 5 print "FizzBuzz".

Explanation and Algorithm

The programming constructs needed for this problem are if statements, a for loop, modulus, the "==" comparasion, and print statements.

The underlying logical test is whether you can correctly order a series of conditionals where outputs for each condition are unique. These conditions are: the number is a multiple of 3, the number is a multiple of 5, the number is a multiple of both, and the number is none of these. The key is to recognize that multiples of 3 and 5 should be checked for first. The reason is if you put one of the other conditionals above it, both will execute, resulting in a wrong output.

The first conditional should check if the number is a multiple of 3 and 5. For the following two conditionals, order doesn't matter. The last conditional is if the number is none of the above.

Hints

1. What is the best way to iterate through the numbers 1 to 100?

2. What operators might be useful for this problem? For example, modulus or equality check.

3. Is there a specific order you should arrange the conditionals in?

4. What happens if you put the num mod 5 statement first?

5. What happens if you put the the num mod 5 and num mod 3 conditional first?

Code

```java
/*Answer 1 */

public class FizzBuzz{
   public static void main(String [] args){
      for(int num = 0; num <= 100; num++){
         if ( num \% 3 == 0 && num \% 5 == 0){
            System.out.println("FuzzBuzz");
         }
         else if ( num \% 3 == 0){
            System.out.println("Fizz");
         }
         else if ( num \% 5 == 0){
            System.out.println("Buzz");
         }
      }
   }
}
```

```java
/* Answer 2 */

public class FizzBuzz{
   public static void main(String [] args){
      for(int num = 0; num <= 100; num++){
         if ( num \% (5*3) == 0){
            System.out.println("FuzzBuzz");
         }
         else if ( num \% 3 == 0){
            System.out.println("Fizz");
         }
         else if ( num \% 5 == 0){
            System.out.println("Buzz");
         }
      }
   }
}
```

Run time analysis

The run time of this solution is $O(n)$, where n is the number of items being printed. For the current statement of the problem $n = 100$ because we are printing 100 items.