

# The Java Function Functional Interface: Case Study ex9

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# Learning Objectives in this Part of the Lesson

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- Know how the Java Function functional interface can be used in conjunction with Concurrent HashMap to compute, cache, & retrieve large prime numbers

```
PrimeResult checkIfPrime
(Integer primeCandidate,
Map<Integer, Integer> primeCache) {
    var smallestFactor =
        primeCache
            .computeIfAbsent
              (primeCandidate,
               PrimeUtils::isPrime);

    return new PrimeResult
        (primeCandidate,
         smallestFactor);
}
```

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# Applying the Java Function Functional Interface

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The screenshot shows an IDE window with the following components:

- Project Explorer (Left):** Shows a project structure with folders like `src/main/java/` and subfolders `utils`, `Options`, `PrimeUtils`, `RandomUtils`, `RunTimer`, and `ex8`.
- Code Editor (Center):** Displays the `PrimeResult` class in `PrimeUtils.java`. The code includes a Javadoc comment and a `checkIfPrime` method.

```
23 /**  
24  * Check if {@code primeCandidate} is prime or not.  
25  *  
26  * @param primeCandidate The number to check for primality  
27  * @param primeCache A cache that avoids rechecking if a number is prime  
28  * @return A {@link PrimeResult} record that contains the original  
29  *         {@code primeCandidate} and either 0 if it's prime or  
30  *         its smallest factor if it's not prime.  
31  */  
32 @NotNull  
33 public static PrimeResult checkIfPrime  
34     (Integer primeCandidate,  
35      @NotNull Map<Integer, Integer> primeCache) {  
36     var smallestFactor: Integer = primeCache  
37         .computeIfAbsent( key: primeCandidate,  
38                          mappingFunction: PrimeUtils::isPrime);  
39  
40     // Return a record containing the prime candidate and the  
41     // result of checking if it's prime.  
42     return new PrimeResult(primeCandidate, smallestFactor);
```
- Bottom Panel:** Contains various toolbars and status information, including Git, CodeWhisperer Reference Log, Logcat, Profiler, Build, Dependencies, TODO, Problems, Terminal, Services, App Inspection, and a status bar at the bottom showing "AWS: No credentials selected", "CodeWhisperer", "19:34", "CRLF", "UTF-8", "4 spaces", and "main".

See [github.com/douglasraigschmidt/ModernJava/tree/main/FP/ex9](https://github.com/douglasraigschmidt/ModernJava/tree/main/FP/ex9)

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# End of the Java Function Functional Interface: Case Study ex9