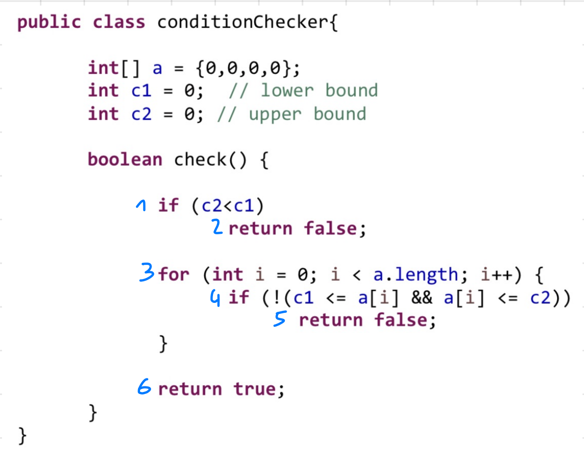
Tema esame nuovo schema 2

Esercizio 1



```
public class conditionChecker{

        int[] a = {0,0,0,0};
        int c1 = 0;  // lower bound
        int c2 = 0; // upper bound

        boolean check() {

            1 if (c2<c1)
                  2 return false;

            3 for (int i = 0; i < a.length; i++) {
                  4 if (!(c1 <= a[i] && a[i] <= c2))
                        5 return false;
              }

            6 return true;
        }
}
```

1.1 Istruzioni

TC1 : a = [0, 0, 0, 0] $C_1 = 10$ $C_2 = 2$ copre 1, 2

TC2 : a = [3, 4, 5, 6] $C_1 = 2$ $C_2 = 8$ copre 1, 3, 4, 6

TC3 : a = [1, 0, 0, 0] $C_1 = 3$ $C_2 = 8$ copre 1, 3, 4, 5

Convertito in simil JUnit:

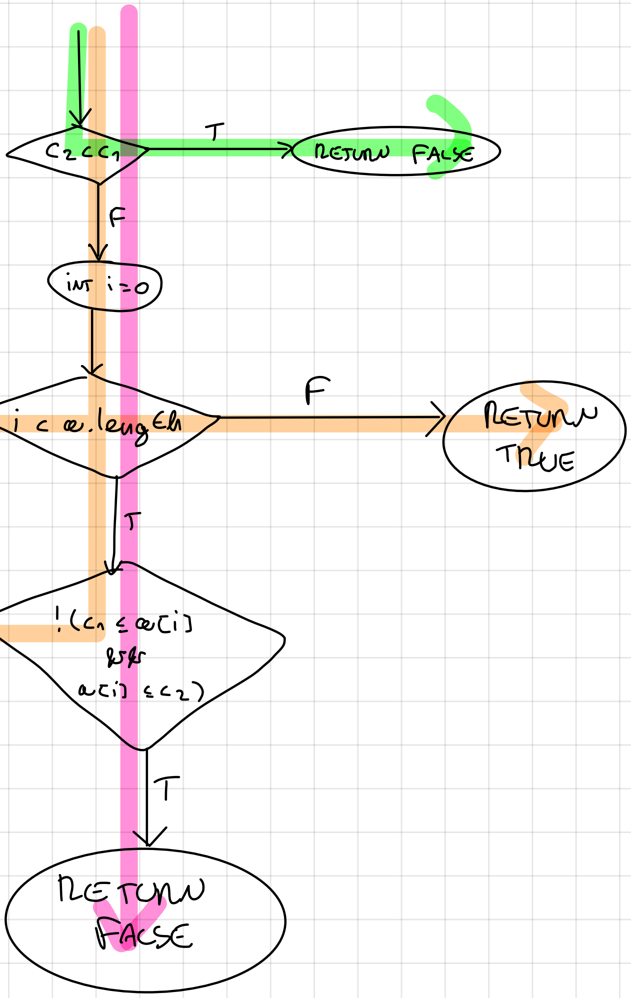
```
@Test
public void testIstruzioni() {
      conditionChecker c = new conditionChecker();
      //TC1
      c.a = new int[] {0,0,0,0};
      c.c1 = 10;
      c.c2 = 2;
      assertEquals(false, c.check());
      //TC2
      c.a = new int[] {3,4,5,6};
      c.c1 = 2;
      c.c2 = 8;
      assertEquals(true, c.check());
      //TC3
      c.a = new int[] {1,0,0,0};
      c.c1 = 3;
      c.c2 = 8;
      assertEquals(false, c.check());
}
```

1.2 Branch

TC1: 🟩

TC2: 🟧

TC3: 🟪



Tc1, Tc2, Tc3 coprono anche i branch!

⇒ Non ho bisogno di un altro metodo di test

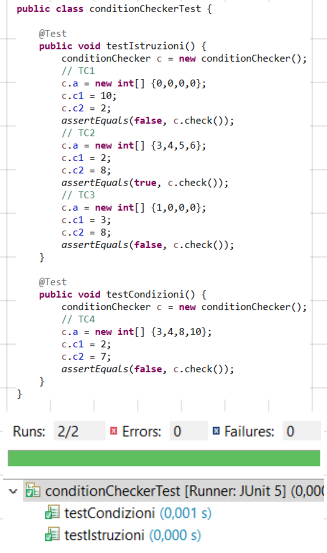
1.3 Condizioni:

$c_2 < c_1$	
T	TC2
F	TC1

!($c_1 \le a[i]$ &&	$a[i] \le c_2$)	
T	T	TC2
F	(T)	TC3
~~T~~	~~T~~	
T	F	TC4 : a = [3, 4, 8, 10] $c_1 = 2$ $c_3 = 7$

Aggiungiamo il seguente test simil Junit al metodo di test precedente per coprire le condizioni:

```
@Test
Public void test Condizioni() {
    condition Checker c = New condition Checker();
    //TC4
    c.a = New int[] {3, 4, 8, 10}
    c.c1 = 2
    c.c2 = 7
    Assert Equals (False, c.check());
}
```



```
public class conditionCheckerTest {

    @Test
    public void testIstruzioni() {
        conditionChecker c = new conditionChecker();
        // TC1
        c.a = new int[] {0,0,0,0};
        c.c1 = 10;
        c.c2 = 2;
        assertEquals(false, c.check());
        // TC2
        c.a = new int[] {3,4,5,6};
        c.c1 = 2;
        c.c2 = 8;
        assertEquals(true, c.check());
        // TC3
        c.a = new int[] {1,0,0,0};
        c.c1 = 3;
        c.c2 = 8;
        assertEquals(false, c.check());
    }

    @Test
    public void testCondizioni() {
        conditionChecker c = new conditionChecker();
        // TC4
        c.a = new int[] {3,4,8,10};
        c.c1 = 2;
        c.c2 = 7;
        assertEquals(false, c.check());
    }
}
```

```
Runs: 2/2    Errors: 0    Failures: 0

conditionCheckerTest [Runner: JUnit 5] (0,000
    testCondizioni (0,001 s)
    testIstruzioni (0,000 s)
```

1.4 MCDC:

TC1, TC2, TC3, TC4 coprono già l'MCDC.