First Task

The CTYRSTEN function, which from the six edge lengths a,b,c,d,e, determines whether a quadrilateral exists, i.e. returns true or false

First task I devided into multiple files

File with fuction CTYRSTEN

CTYRSTEN

```
function exists = CTYRSTEN(a, b, c, d, e, f)

    if (a + b + c > d) && (b + c + d > a) && (c + d + a > b) && (d + a + b > c) && ...
       (a + b + e > f) && (b + e + f > a) && (e + f + a > b) && (f + a + b > e) && ...
       (a + c + e > f) && (c + e + f > a) && (e + f + a > c) && (f + a + c > e) && ...
       (b + c + e > f) && (c + e + f > b) && (e + f + b > c) && (f + b + c > e) && ...
       (a + d + e > f) && (d + e + f > a) && (e + f + a > d) && (f + a + d > e) && ...
       (b + d + e > f) && (d + e + f > b) && (e + f + b > d) && (f + b + d > e)
        exists = true;
    else
        exists = false;
    end
end
```

Where the lengths of any three edges must be greater than the length of the fourth edge, and if that is possible it return TRUE, in the other case FALSE

File with Result run

Result

```
result = CTYRSTEN(1, 2, 3, 4, 5, 6);
disp(result);
```

Simple result file that display the the result.

After run returns:

```
octave:1> result
1
```

Test file

Test Ctyrsten

```
% Test 1: Valid Quadrilateral
result1 = CTYRSTEN(3, 4, 5, 6, 7, 8);
disp(['Test 1 (Valid Quadrilateral): ', num2str(result1)]);

% Test 2: One Very Long Edge
result2 = CTYRSTEN(100, 2, 3, 4, 5, 6);
```

```
disp(['Test 2 (One Very Long Edge): ', num2str(result2)]);

% Test 3: Zero or Negative Length
result3 = CTYRSTEN(0, -1, 2, 3, 4, 5);
disp(['Test 3 (Zero or Negative Length): ', num2str(result3)]);

% Test 4: All Edges Equal
result4 = CTYRSTEN(5, 5, 5, 5, 5, 5);
disp(['Test 4 (All Edges Equal): ', num2str(result4)]);

% Test 5: Extremely Small Edges
result5 = CTYRSTEN(0.1, 0.1, 0.1, 0.1, 0.1, 100);
disp(['Test 5 (Extremely Small Edges): ', num2str(result5)]);
```

Where each test as the comments suggest add test for every edge case that can happen with CTRYRSTEN function.

After run returns:

```
octave:2> test_ctyrsten
Test 1 (Valid Quadrilateral): 1
Test 2 (One Very Long Edge): 0
Test 3 (Zero or Negative Length): 0
Test 4 (All Edges Equal): 1
Test 5 (Extremely Small Edges): 0
```