Practical No: 069

Aim: -Implementation of Golden Section Search

Step 1: Define a function

```
function f(x)
    return x^2
end
```

Step 2: Implement Golden Section Search Function

```
function golden_section_search(f, a, b, n)
    p = 1.618 - 1
    d = p * b + (1 - p) * a
    yd = f(d)

    for i = 1:n-1
        print(a, "\n")
        print(b, "\n")

        c = p * a + (1 - p) * b
        yc = f(c)

        if yc < yd
            b, d, yd = d, c, yc
        else
            a, b = b, c
        end
    end

    return a < b ? (a, b) : (b, a)
end
```

Step 3: Call Golden Section Search with the defined function and an interval (a, b) and number of iterations

In our case a = 0 and b = 10 and number of iterations n = 10

```
julia> golden_section_search(f, 0, 10, 10)
0
10
0
6.1800000000000015
0
3.819999999999999
0
2.36076
0
1.4592399999999992
0
0.9018103199999997
0
0.5574296799999996
0
0.3444915422399998
0
0.21293813775999978
(0, 0.13159576913567989)

julia>
```