CHAPTER 4

CONCLUSIONS

Baxley and Haywood shown in [1] that the BVP

$$y''(x) + f(y) = 0, \quad 0 \le x \le 1,$$
$$y(0) = 0, \quad y(1) = 0,$$

has at least N nonnegative symmetric solutions if provide N conditions on the nonlinear function $f(y)$ by used the shooting method.

We have extended the boundary value problem to

$$y''(x) + f(x,y) = 0, \quad a \le x \le b,$$
$$y(a) = 0, \quad y(b) = 0, \tag{4.1}$$

and provided N conditions on the nonlinear function $f(x,y)$ by using the shooting method. It appears that the Theorem 3.2.1 and Theorem 3.3.1, guarantee that the BVP (4.1) has at least N nonnegative symmetric solutions.

We can conclude that, the existence of multiple nonnegative symmetric solution of the BVP in the form of equation (4.1) depends on providing conditions on the nonlinear function $f(x,y)$.