***ASSIGNMENT-4***

***QUESTION NO.:-3***

***ALGORITHM:-***

*Func(x)*

Statement: - This function take a value ‘x’ as argument.

Step 1: y←(1-x)\*cos(x) – sin(x) //get the value of the given function for the input ‘x’

Step 2: Return the value of ‘y’.

Step 3: END

*Cbracket(a,b)*

Statement: - This function take two value ‘a’ and ‘b’ as arguments to find the real number.

Step 1: fa←Func(a) //call the Func function

Step 2: fb←Func(b) //call the Func function

Step 3: If ((fa<0.0 and fb>0.0) or (fa>0.0 and fb<0.0)) then return 1,

Otherwise return 0.

Step 4: END

*Root(a,b,eps,Nmux)*

Statement: - This function take two real number ‘a’ and ‘b’, expected value ‘eps’ and maximum number of iteration ‘Nmux’.

Step 1: Initialize ‘itr’ by 1.

Step 2: c←(a+b)/2

Step 3: If (absolute value(b-a) < eps) then return the value of ‘c’.

Step 4: If (Func(c)=0) then return the value of ‘c’. //Func is a function which is calling hear to gate f(c)

Step 5: Repeat step 6 to 13 while (itr≤Nmax) do,

Step 6: fa←Func(a) //call the Func function

Step 7: fb←Func(b) //call the Func function

Step 8: c←(a+b)/2

Step 9: fc←Func(c) //call the Func function

Step 10: If (fa\*fc<0) then go to step 11,

Otherwise go to step 12

Step 11: b←c

Step 12: a←c

Step 13: itr←itr+1

Step 14: Return the value of ‘c’

Step 15: END

*Main( )*

Step 1: Read two value ‘a’ and ‘b’.

Step 2: t←Cbracket(a,b)

Step 3: If (t=1) then go to step 4,

Otherwise go to step 1

Step 4: Read the expected root ‘eps’ from user.

Step 5: Read the maximum iteration ‘n’ from user.

Step 6: c←Root(a,b,eps,n) //call the Root function

Step 7: Display the value of ‘c’

Step 8: END