How to use Bisection method of numerical analysis

GROUP 8

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Steps for Bisection Method **Author : Kenneth Ruto**

1. Choose two initial values, a and b, such that $f(a)$ and $f(b)$ have opposite signs.
2. Compute the midpoint $c = (a + b)/2$.
3. Evaluate $f(c)$.
4. If $f(c)$ is close enough to zero, then c is the root we seek.The algorithm then terminates.
5. If $f(c)$ and $f(a)$ have opposite signs then the root is in the interval $[a\ ,\ c]$. Set b=c and repeat step 2
6. If $f(c)$ and $f(b)$ have opposite signs then the root is in the interval $[b\ ,\ c]$. Set a=c and repeat step 2

Algorithm for the Bisection Method **Author : Lewis Munene**

Step 1: Choose Initial Values

$a =$ initial value 1
$b =$ initial value 2
$maxIterations = 100$
$tolerance = 1e - 6$

Step 2: Loop to find root

for i in range ($maxIterations$)
$c = (a + b)/2$

Step 3: Evaluate $f(c)$

$f_c = f(c)$

Steps 4-7: Update Initial Values and Repeat

if $(absolute(f_c) < tolerance)$

print(Root found at x = c)

break

else if $(f_c * f_a < 0)$

$b = c$

else

$a = c$

end for loop

Python Implementation **Author : Vincent Mutethia**

*** Check the code in the attached jupyter notebook**