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Math128A: Numerical Analysis
Programming Assignment, Due Nov. 22, 2023

Implement the *modified zeroin* algorithm discussed in class.

You should turn in a .m file `modifiedzeroinxxx.m` which contains a matlab function of the form

```
function [root,info] = modifiedzeroin(@func,Int,params)
```

where xxx is your student id. On input, `func` is a function handle, `Int` is the initial interval, [`Int`.a, `Int`.b], containing a root, and `params` is an object that contains at least three fields `params.root_tol`, `params.func_tol` and `params.maxit`. Your algorithm should terminate once the interval containing the root is at most `params.root_tol` in length, or the function value at the current iterate is at most `params.func_tol` in absolute value. On output, `root` is the computed root, and `info` should have at least one field `info.flag`, which is 0 for a successful execution, and 1 otherwise.

Your program will be tested against a few functions of our choice, against the following criteria:

1. (60 points) A zero is found within given tolerances for each function tested.
2. (40 points) One zero is found within the right number of function calls for each function tested.

Your program will receive 0 points if it is found to be highly similar to the matlab built-in function `fzero`. You must do all your programming work by yourself.

Submit your .m file on gradescope by 23:59PM, Nov. 22, 2023.