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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Problem Solving Through Programming In C (course)

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Course outline

- How does an NPTEL online course work? ()
- Week 0 : ()
- Week 1 ()
- Week 2 ()
- Week 3 ()
- Week 4 ()
- Week 5 ()

Week 10 : Programming Assignment 01

Due on 2023-10-05, 23:59 IST

Write a C program to find the root of the equation using bisection method for different values of allowable error of the root.

$$f(x) = 2x^3 - 3x - 5$$

Your last recorded submission was on 2023-10-05, 09:45 IST

Select the Language for this assignment. C

```c
#include<stdio.h>
float fun (float x); //Function fun returns the function value of f(x)
void bisection (float *x, float a, float b, int *itr); // This function c

int main ()
{
    int itr = 0, maxmitr=10;
    float x, a=1.0, b=2.0, allerr, x1; // x is the value of root in each
   // a and b are the initial range for calculating the root using bisect

scanf("%f", &allerr);  // allerr is the allowable error taken from test c
    bisection (&x, a, b, &itr);

/* Use the printf statement as given below to print the root
printf("Root = %1.4f\n", x1); */
do{
  if(fun(a)*fun(x)<0)
    b=x;
  else
    a=x;
  bisection (&x1,a,b,&itr);
  if(((x1-x)<0 && -(x1-x)<allerr)|| ((x1-x)>0 && (x1-x)<allerr))
  {
    printf("Root = %1.4f",x1);
    return 0;
  }
  x=x1;
}while(itr<maxmitr);
return 1;
}
float fun(float x)
{return (2*x*x*x-3*x-5);}
```

```
33 void bisection(float *x,float a,float b,int *itr)
34 {
35   *x=(a+b)/2;
36   ++(*itr);
37 }
```

You may submit any number of times before the due date. The final submission will be considered for grading.

This assignment has Public Test cases. Please click on "Compile & Run" button to see the status of Public test cases. Assignment will be evaluated only after submitting using Submit button below. If you only save as or compile and run the Program , your assignment will not be graded and you will not see your score after the deadline.

Save as Draft | Compile & Run | Submit | Reset

Sample Test Cases

	Input	Output
Test Case 1	0.001	Root = 1.7197
Test Case 2	0.1	Root = 1.6875