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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 6 ()
- Week 7 ()

Week 11 : Programming Assignment 3

Due on 2023-10-12, 23:59 IST

Write a C program to solve the following differential equation using Runge-Kutta method. Step size h=0.3

$$10\frac{dy}{dx} + 3y^3 = x(x+1), y(0.3) = 5$$

Find $y(x)$ for different values of x as given in the test cases.

Your last recorded submission was on 2023-10-11, 11:17 IST

Select the Language for this assignment. C

```c
#include<stdio.h>
float func(float x,float y);
int main()
{
    float m1,m2,m3,m4,m,h=0.3;
    float x0 = 0.3, y0 = 5, xn;
    scanf("%f",&xn); //xn will be taken from test cases


//Use the printf statement as: printf("y=%f",y);

 while(x0<xn)
    {
        m1=func(x0,y0);
        m2=func((x0+h/2.0),(y0+m1*h/2));
        m3=func((x0+h/2.0),(y0+m2*h/2));
        m4=func((x0+h),(y0+m3*h));
        m=((m1+2*m2+2*m3+m4)/6);
        y0=y0+m*h;
        x0=x0+h;
    }
    printf("y=%f",y0);  // Final output
    return 0;
}

float func(float x,float y)
{
    float m;
    m=(x*(x+1)-3*y*y*y)/10;
    return m;
}
```

Week 8 ()

Week 9 ()

Week 10 ()

Week 11 ()

Week 12 ()

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Problem Solving Session - July 2023 ()

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	0.9	y=1.777165
Test Case 2	1.2	y=1.468128