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// C++ program to implement Runge_Kutta method
#include<stdio.h>

// A sample differential equation "dy/dx = (x - y)/2"
float dydx(float x, float y)
{
    return((x - y)/2);
}

// Finds value of y for a given x using step size h
// and initial value y0 at x0.
float rungeKutta(float x0, float y0, float x, float h)
{
    // Count number of iterations using step size or
    // step height h
    int n = (int)((x - x0) / h);

    float k1, k2, k3, k4, k5;

    // Iterate for number of iterations
    float y = y0;
    for (int i=1; i<=n; i++)
    {
        // Apply Runge Kutta Formulas to find
        // next value of y
        k1 = h*dydx(x0, y);
        k2 = h*dydx(x0 + 0.5*h, y + 0.5*k1);
        k3 = h*dydx(x0 + 0.5*h, y + 0.5*k2);
        k4 = h*dydx(x0 + h, y + k3);

        // Update next value of y
        y = y + (1.0/6.0)*(k1 + 2*k2 + 2*k3 + k4);

        // Update next value of x
        x0 = x0 + h;
    }

    return y;
}

// Driver method
int main()
{
    float x0 = 0, y = 1, x = 2, h = 0.2;
    printf("\nThe value of y at x is : %f",
           rungeKutta(x0, y, x, h));
    return 0;
}

```

### Output:

The value of y at x is : 1.103639