#include <stdio.h>

/\* function for which the integral is calculated \*/

double f(double x) {

return (1 / (1 + x));

}

int main() {

int i, n;

double x0, xn, h, y[1000], so, se, ans, x[1000];

// taking input

printf("\nEnter values of x0(lower limit), xn(upper limit), h(height of each sub interval):\n");

scanf("%lf%lf%lf", &x0, &xn, &h);

// finding number of intervals

n = (xn - x0) / h;

if (n % 2 == 1)

n = n + 1;

h = (xn - x0) / n;

printf("%lf interval size ~ %d\n", h, n);

printf("x\t\ty\n");

// calculating values of y

for (i = 0; i <= n; i++) {

x[i] = x0 + i \* h;

y[i] = f(x[i]);

printf("%lf\t%lf\n", x[i], y[i]);

}

so = 0; // sum of odd terms

se = 0; // sum of even termas

for (i = 1; i < n; i++) {

if (i % 2 == 1)

so = so + y[i];

else

se = se + y[i];

}

/\* simpsons 1/3 rule \*/

ans = h / 3 \* (y[0] + y[n] + 4 \* so + 2 \* se);

printf("Value of the integral is:: %lf", ans);

return 0;

}