

```
/* Loops example loop22.F2003.c while loop - conditional loop */
/* Stopped by formula convergence to a value */
/* Eg: Recursive series method for determining square roots
```

- r converges to $r * r = x$ (x is input) */

```
#include <stdio.h>
#include <math.h>
```

```
main( )
{
    double x, r = 1;           /* arbitrary initial value for r */

    scanf("%lf", &x);        /* input 25 as data */

    while( fabs( r * r - x ) > 0.001 ) /* close to a given value */
    {
        r = 0.5 * ( r + x / r );

        printf( " %lf\n", r );
    }

    printf( "\n The square root of %d is %lf\n", x, r );
}
```