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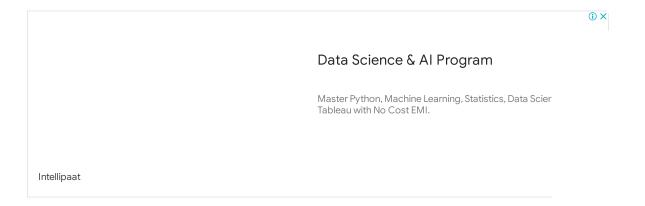
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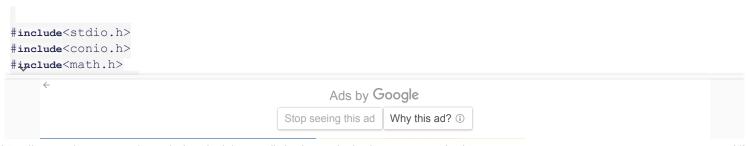
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Gauss Elimination Method Using C



Earlier in <u>Gauss Elimination Method Algorithm</u> and <u>Gauss Elimination Method Pseudocode</u>, we discussed about an algorithm and pseudocode for solving systems of linear equation using Gauss Elimination Method. In this tutorial we are going to implement this method using C programming language.

Complete Program for Gauss Elimination method using C Programming Language



```
int main()
         float a[SIZE][SIZE], x[SIZE], ratio;
         int i,j,k,n;
         clrscr();
         /* Inputs */
         /* 1. Reading number of unknowns */
         printf("Enter number of unknowns: ");
         scanf("%d", &n);
         /* 2. Reading Augmented Matrix */
         for (i=1; i<=n; i++)</pre>
                   for (j=1; j<=n+1; j++)</pre>
                             printf("a[%d][%d] = ",i,j);
                              scanf("%f", &a[i][j]);
         /* Applying Gauss Elimination */
         for (i=1; i<=n-1; i++)</pre>
                   if(a[i][i] == 0.0)
                             printf("Mathematical Error!");
                             exit(0);
                   for (j=i+1; j<=n; j++)</pre>
                              ratio = a[j][i]/a[i][i];
                              for (k=1; k<=n+1; k++)
                                            a[j][k] = a[j][k] - ratio*a[i][k];
          /* Obtaining Solution by Back Subsitution */
         x[n] = a[n][n+1]/a[n][n];
         for (i=n-1; i>=1; i--)
                   x[i] = a[i][n+1];
                   for (j=i+1; j<=n; j++)</pre>
                                   x[i] = x[i] - a[i][j]*x[j];
                   x[i] = x[i]/a[i][i];
          /* Displaying Solution */
         printf("\nSolution:\n");
         for (i=1; i<=n; i++)</pre>
                 printf("x[%d] = %0.3f\n",i, x[i]);
         getch();
```

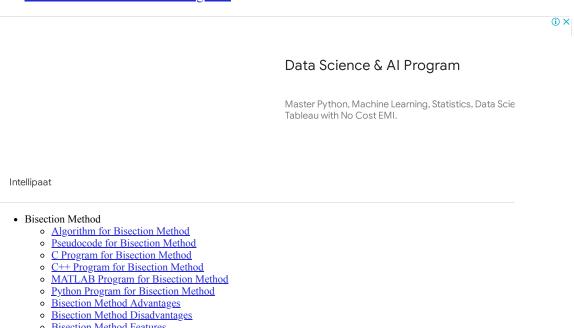
```
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```

Output: Gauss Elimination Method for Solving Systems of Linear Equations

```
Enter number of unknowns: 3
a[1][1] = 1
a[1][2] = 1
a[1][3] = 1
a[1][4] = 9
a[2][1] = 2
a[2][2] = -3
a[2][3] = 4
a[2][4] = 13
a[3][1] = 3
a[3][2] = 4
a[3][3] = 5
a[3][4] = 40
Solution:
x[1] = 1.000
x[2] = 3.000
x[3] = 5.000
```

Recommended Readings

- 1. Gauss Elimination Method Algorithm
- 2. Gauss Elimination Method Pseudocode
- 3. Gauss Elimination Method Using C
- 4. Gauss Elimination Method Using C++



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