



```
a=input('Enter the Coefficient Matrix a:')
```

```
a = 3x3
    10      1      1
     2     10      1
     2      2     10
```

```
b=input('Enter the RHS Matrix b:')
```

```
b = 3x1
    12
    13
    14
```

```
itr=input('Enter the number of iterations: ')
```

```
itr =
     6
```

```
Iteration=1
x1=1.200000, x2=1.060000,x3=0.948000
Iteration=2
x1=0.999200, x2=1.005360,x3=0.999088
Iteration=3
x1=0.999555, x2=1.000180,x3=1.000053
Iteration=4
x1=0.999977, x2=0.999999,x3=1.000005
Iteration=5
x1=1.000000, x2=1.000000,x3=1.000000
Iteration=6
x1=1.000000, x2=1.000000,x3=1.000000
```

```
a=input('Enter the Coefficient Matrix a:')
```

```
a = 3x3
     5     -1      0
     1     -5      1
     0      1     -5
```

```
b=input('Enter the RHS Matrix b:')
```

```
b = 3x1
     9
    -4
     6
```

```
itr=input('Enter the number of iterations: ')
```

```
itr =
     8
```

```
Iteration=1
x1=1.800000, x2=1.160000,x3=-0.968000
Iteration=2
x1=2.032000, x2=1.012800,x3=-0.997440
Iteration=3
x1=2.002560, x2=1.001024,x3=-0.999795
Iteration=4
x1=2.000205, x2=1.000082,x3=-0.999984
Iteration=5
x1=2.000016, x2=1.000007,x3=-0.999999
Iteration=6
x1=2.000001, x2=1.000001,x3=-1.000000
Iteration=7
x1=2.000000, x2=1.000000,x3=-1.000000
Iteration=8
x1=2.000000, x2=1.000000,x3=-1.000000
```

```
a=input('Enter the Coefficient Matrix a:')
```

```
a = 3x3
    27     6    -1
     6    15     2
     1     1    54
```

```
b=input('Enter the RHS Matrix b:')
```

```
b = 3x1
    85
    72
   110
```

```
itr=input('Enter the number of iterations: ')
```

```
itr =
    7
```

```
Iteration=1
x1=3.148148, x2=3.540741,x3=1.913169
Iteration=2
x1=2.432175, x2=3.572041,x3=1.925848
Iteration=3
x1=2.425689, x2=3.572945,x3=1.925951
Iteration=4
x1=2.425492, x2=3.573010,x3=1.925954
Iteration=5
x1=2.425478, x2=3.573015,x3=1.925954
Iteration=6
x1=2.425476, x2=3.573016,x3=1.925954
Iteration=7
x1=2.425476, x2=3.573016,x3=1.925954
```

```
clear
A=input('Enter the Coefficient Matrix')
```

```
A = 3x3
     2     3     5
     7     3    -2
     2     3     5
```

```
b=input('Enter the RHS Matrix')
```

```
b = 3x1
     9
     8
     1
```

System is Inconsistent

```
clear
A=input('Enter the Coefficient Matrix')
```

```
A = 3x3
     5     3     7
     3    26     2
     7     2    10
```

```
b=input('Enter the RHS Matrix')
```

```
b = 3x1
     4
     9
     5
```

System is consistent

System has infinite solutions and one particular solution is

x: $7/11$

y: $3/11$

z: 0

```
clear
```

```
A=input('Enter the Coefficient Matrix')
```

```
A = 3x3
```

```
27    6   -1
 6    15   2
 1     1  54
```

```
b=input('Enter the RHS Matrix')
```

```
b = 3x1
```

```
85
72
110
```

System is consistent

System has Unique solution and is

x: $48250/19893$

y: $71078/19893$

z: $12771/6631$