# Assignment 3(c)

## Question

Check whether the system of equation has unique solution, infinitely many solutions or no solution. If there exist a unique solution find out the solution.

$-x+3y+7z=5$
$2x-2y-2z=1$
$x-y-z=-2$

## Code

```
 1   Coeff_matrix = [-1 3 7; 2 -2 -2; 1 -1 -1];
 2   Const_matrix = [5; 1; -2];
 3   disp('Coefficient Matrix = ');
 4   disp(Coeff_matrix);
 5   disp('Constant Matrix = ');
 6   disp(Const_matrix);
 7   [NumRows, NumCols]=size(Coeff_matrix);
 8   if(rank(Coeff_matrix) == rank([Coeff_matrix Const_matrix]))
     && (NumCols == rank(Coeff_matrix))
 9       disp('Solution = ');
10       disp(inv(Coeff_matrix)*Const_matrix);
11   elseif(rank(Coeff_matrix) == rank([Coeff_matrix
     Const_matrix])) && (NumCols > rank(Coeff_matrix))
12       disp('Infinitely Many Solution');
13   else
14       disp('No solution');
15   end
```

## Output

```
>> Assignment_3c
Coefficient Matrix =
    -1     3     7
     2    -2    -2
     1    -1    -1

Constant Matrix =
     5
     1
    -2
```

```
No solution
>>
```