Program

```c
#include <stdio.h>

int s[100][100], sr[100][3], r, c, i, j, l, k = 1;

void sparse(int s[100][100], int r, int c) {
  sr[0][0] = r;
  sr[0][1] = c;
  for (i = 0; i < r; i++) {
    for (j = 0; j < c; j++) {
      if (s[i][j] != 0) {
        sr[k][0] = i;
        sr[k][1] = j;
        sr[k][2] = s[i][j];
        k++;
      }
    }
  }
  sr[0][2] = k - 1;
  for (k = 0; k < sr[0][2] + 1; k++) {
    printf("\n");
    for (l = 0; l < 3; l++) {
      printf("%d\t", sr[k][l]);
    }
  }
}

int main() {
    int i, j;
    printf("Enter the no of rows and columns:");
    scanf("%d%d", & r, & c);
    printf("Enter the elements of matrix:\n");
    for (i = 0; i < r; i++) {
      for (j = 0; j < c; j++) {
        scanf("%d", & s[i][j]);
      }
    }
    printf("Sparse representation:");
    sparse(s, r, c);
}
```

Output

```
Enter the no of rows and columns:2 3
Enter the elements of matrix:
1 0 0
0 2 0
Sparse representation:
2 3 2
0 0 1
1 1 2
```

Experiment No: 2
Date:

SPARSE MATRIX REPRESENTATION

Aim:

To convert an matrix to its corresponding sparse matrix representation and display the matrix.

Algorithm:

1. Start
2. Obtain a matrix 's' whose major number of elements are zeroes.
3. Create another matrix sr[ ][3].
4. Define a function sparse(int s[10][10],int r,int c).
5. Initialize k=1.
6. Assign the number of rows 'r' to sr[0][0] and number of columns 'c' to sr[0][1].
7. Begin for loop from i=0 to i<r.
   Begin for loop from j=0 to j<c.

```
if: element in matrix s!=0
    sr[k][0]=i
    sr[k][1]=j
    sr[k][2]=s[i][j]
    k++
```

8. Assign the value of k to sr[0][2].
9. Display the sparse matrix.
10. Stop

Result:

Program has been executed successfully and obtained the output