Bash Shell Script to find transpose of a matrix

In this program, you will learn how to find transpose of a matrix. Suppose, a matrix has a size m by n, then its transpose will have a size n by m.

```
#Bash script to find transpose of a matrix
matrix1=(1 2 3 4 5 6 7 8 9)
rows=3
cols=3
echo "Matrix"
for((i=0; i<rows; i++))
do
  for((j=0; j<cols; j++))
  do
    index=$((i*cols+j))
    echo -n "${matrix1[index]} "
  done
  echo
done

for((i=0; i<rows; i++))
do
  for((j=i+1; j<cols; j++))
  do
    index1=$((rows*i + j))
    index2=$((rows*j + i))
    temp=${matrix1[index1]}
    matrix1[index1]=${matrix1[index2]}
    matrix1[index2]=$temp
  done
done

echo "Transpose of a matrix"
for((i=0; i<rows; i++))
do
  for((j=0; j<cols; j++))
  do
    index=$((i*cols+j))
    echo -n "${matrix1[index]} "
  done
  echo
done
```

Output of the above program

```
Matrix
1 2 3
4 5 6
7 8 9
Transpose of a matrix
1 4 7
2 5 8
3 6 9
```