AOAD Assignment-1

Q.1)

Algorithm:

```
function(str):
   store indexes of '[' in array open_indexes
   n <- str.length
   i <- 0
   open <- 0 //store no. of non-closed brackets
   k <- 0 //index for positions of closest open brackets
   swaps <- 0
   while i < n:
      if str[i] == '[':
         increment no. of non-closed brackets
         i <- i + 1
      else if open == 0:
         fetch closest '[' pos in j
         k <- k + 1
         swap(str[i], str[j])
         swaps <- swaps + j - i
         i <- i + 2
      else:
         k <- k + 1 //move to next available '['
         decrement no. of non-closed brackets
         i <- i + 1
```

print swaps

Code:

```
#include<stdio.h>
#include<conio.h>
int main(){
   int n = 0, i, j, k, open=0, swaps=0;
   char str[100];
   int open_indexes[50];
   char temp;
   printf("Enter string\n");
   gets(str);
   while(str[n] != '\0')
      n++;
   k = 0;
   for(j = 0; j < n && k < n/2; j++){
      if(str[j] == '['){
         open_indexes[k] = j;
         k++;
      }
   }
   k = 0;
   i = 0;
   while(i < n){
      if(str[i] == '['){
         open++;
```

```
            i++;
        }
        else if(open == 0){
            j = open_indexes[k];
            k++;
            temp = str[i];
            str[i] = str[j];
            str[j] = temp;
            swaps += (j-i);
            i += 2;
        }
        else{
            k++;
            open--;
            i++;
        }
    }
    printf("No. of swaps required = %d", swaps);
    getch();
}
```

Output:

```
C:\Users\Samiksha\Desktop\AOA_assignment>q1
Enter string
[]][][
No. of swaps required = 2
C:\Users\Samiksha\Desktop\AOA_assignment>q1
Enter string
```

[[]][]
No. of swaps required = 0