

Exercise 2

Let's have two arrays **A** and **B**, and we want to merge them into array **C** element by element alternately. Both arrays A and B have the same length, n. ex: A={1,2,3,4}, B={10,20,30,40} → C={1,10, 2,20, 3,30, 4,40}

Q1-a) Write an iterative procedure "merge":

```
void merge(int A[],int B[], int C[], int n)
{
int i,j;
i=j=0;
while (i<n){
C[j] =A[i];
j++;
C[j]= B[i];
j++;i++;
}}
```

```
void merge(int A[],int B[], int C[], int n)
{
int i,j;
i=j=0;
for (i=0;i<n;i++){
C[2*i] =A[i];
C[2*i+1]= B[i];
}}
```

```
void merge(int A[],int B[], int C[], int n)
{
int i,j;
for (i=0,j=0; i<n ; j+=2, i++)
C[j] =A[i];
for (i=0,j=1; i<n ; j+=2, i++)
C[j] =B[i];
}
```

Q1-b) Write a recursive procedure "mergeR":

```
void mergeR(int A[],int B[], int C[], int n) {
if(n>=0){
int j=2*n;
C[j] =A[n];
C[j+1]=B[n];
mergeR(A,B,C,n-1);}
}
```

```
void mergeR(int A[],int B[], int C[], int n) {
C[2*n] =A[n];
C[2*n +1]=B[n];
if (n==0)
return;
mergeR(A,B,C,n-1);
}
```

Q2) Write a procedure "mergeG" to merge the two arrays A and B (different lengths), with remaining elements from the longer array appended to the end. ex: A= {1,2,3,4}, B={10,20,30,40,50,60} → C={1,10, 2,20, 3,30, 4,40 ,50,60}

```
void mergeG(int A[], int nA, int B[],int nB , int C []); //nA=the length of A nB= the length of B
{
//size of A != size of B
int i,j,k;
i=j=k=0;
while (i<nA && k<nB ){
C[j++] =A[i++];
C[j++] = B[k++];
}
//A>>>B
while( i<nA)
C[j++] =B[i++];
//B>>>A
while( k<nB)
C[j++] =B[k++];
}
```