

```
#include<stdio.h>
#include<sys/types.h>
#include<string.h>
#include<pthread.h>
#include<stdlib.h>
#include<unistd.h>
#include<ctype.h>
```

```
int partition (int a[], int start, int end)
{
    int pivot = a[end]; // pivot element
    int i = (start - 1);

    for (int j = start; j <= end - 1; j++)
    {
        // If current element is smaller than the pivot
        if (a[j] < pivot)
        {
            i++; // increment index of smaller element
            int t = a[i];
            a[i] = a[j];
            a[j] = t;
        }
    }
    int t = a[i+1];
    a[i+1] = a[end];
    a[end] = t;
    return (i + 1);
}
```

```
/* function to implement quick sort */
```

```
void quick(int a[], int start, int end) /* a[] = array to be sorted, start = Starting index, end = Ending index */
```

```
{  
    if (start < end)  
    {  
        int p = partition(a, start, end); //p is the partitioning index  
        quick(a, start, p - 1);  
        quick(a, p + 1, end);  
    }  
}
```

```
void merge(int arr[], int l, int m, int r)
```

```
{  
    int i, j, k;  
    int n1 = m - l + 1;  
    int n2 = r - m;
```

```
/* create temp arrays */
```

```
int L[n1], R[n2];
```

```
/* Copy data to temp arrays L[] and R[] */
```

```
for (i = 0; i < n1; i++)  
    L[i] = arr[l + i];  
for (j = 0; j < n2; j++)  
    R[j] = arr[m + 1 + j];
```

```
/* Merge the temp arrays back into arr[l..r]*/
```

```
i = 0; // Initial index of first subarray
```

```
j = 0; // Initial index of second subarray
```

```

k = l; // Initial index of merged subarray
while (i < n1 && j < n2) {
    if (L[i] <= R[j]) {
        arr[k] = L[i];
        i++;
    }
    else {
        arr[k] = R[j];
        j++;
    }
    k++;
}

/* Copy the remaining elements of L[], if there
are any */
while (i < n1) {
    arr[k] = L[i];
    i++;
    k++;
}

/* Copy the remaining elements of R[], if there
are any */
while (j < n2) {
    arr[k] = R[j];
    j++;
    k++;
}
}

/* l is for left index and r is right index of the

```

```

sub-array of arr to be sorted */
void mergeSort(int arr[], int l, int r)
{
    if (l < r) {
        // Same as (l+r)/2, but avoids overflow for
        // large l and h
        int m = l + (r - l) / 2;

        // Sort first and second halves
        mergeSort(arr, l, m);
        mergeSort(arr, m + 1, r);

        merge(arr, l, m, r);
    }
}

```

```

int main()
{
    pid_t p;
    int n;
    printf("Enter the number of elements");
    scanf("%d",&n);
    int a[n];

    for(int i=0;i<n;i++)
    {
        printf("Enter %d th element ",(i+1));
        scanf("%d",&a[i]);
    }

    p=fork();

```

```

quick(a,0,n-1);

if(p==0)
{

    printf("Process is child, ID is %d \n",getpid());
    printf(" Parent's process, ID is %d \n",getppid());
    quick(a,0,n-1);
    printf("After sorting elemets are ");
    for(int i=0;i<n;i++)
    {
        printf("%d ",a[i]);
    }

}

else{
    printf("Process is in Parent ,ID is %d \n",getpid());
    mergeSort(a,0,n-1);
    printf("After merge Sort elements are \n ");

    for(int i=0;i<n;i++)
    {
        printf("%d ",a[i]);
    }
}

return 0;
}

```

Plagiarism Scan Report



Characters:6962

Words:996

Sentences:66

Speak Time:
8 Min

Excluded URL

None

Content Checked for Plagiarism

Blockchain technology is a distributed ledger with data entries that are disseminated among network nodes and contain all the specifics of completed transactions. Consensus procedures certify each transaction done in the system, and the data that is saved cannot be changed. The key technology underlying the widely used cryptocurrency, Bitcoin is called

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{
    int pivot = a[end]; // pivot element
    int i = (start - 1);

    for (int j = start; j <= end - 1; j++)
    {
        // If current element is smaller than the pivot
        if (a[j] < pivot)
        {
            i++; // increment index of smaller element
            int t = a[i];
            a[i] = a[j];
            a[j] = t;
        }
    }
    int t = a[i+1];
    a[i+1] = a[end];
    a[end] = t;
    return (i + 1);
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void merge(int arr[], int l, int m, int r)
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/* Copy data to temp arrays L[] and R[] */
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for (i = 0; i < n1; i++)  
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    R[j] = arr[m + 1 + j];
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/* Merge the temp arrays back into arr[l..r]*/
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i = 0; // Initial index of first subarray  
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k = l; // Initial index of merged subarray
while (i < n1 && j < n2) {
    if (L[i] <= R[j]) {
        arr[k] = L[i];
        i++;
    }
    else {
        arr[k] = R[j];
        j++;
    }
    k++;
}

/* Copy the remaining elements of L[], if there
are any */
while (i < n1) {
    arr[k] = L[i];
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/* Copy the remaining elements of R[], if there
are any */
while (j < n2) {
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/* l is for left index and r is right index of the

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sub-array of arr to be sorted */
void mergeSort(int arr[], int l, int r)
{
    if (l < r) {
        // Same as (l+r)/2, but avoids overflow for
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        int m = l + (r - l) / 2;

        // Sort first and second halves
        mergeSort(arr, l, m);
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        merge(arr, l, m, r);
    }
}

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int main()
{
    pid_t p;
    int n;
    printf("Enter the number of elements");
    scanf("%d",&n);
    int a[n];

    for(int i=0;i<n;i++)
    {
        printf("Enter %d th element ",(i+1));
        scanf("%d",&a[i]);
    }

    p=fork();

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quick(a,0,n-1);

if(p==0)
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    printf("Process is child, ID is %d \n",getpid());
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    quick(a,0,n-1);
    printf("After sorting elemets are ");
    for(int i=0;i<n;i++)
    {
        printf("%d ",a[i]);
    }

}

else{
    printf("Process is in Parent ,ID is %d \n",getpid());
    mergeSort(a,0,n-1);
    printf("After merge Sort elements are \n ");

    for(int i=0;i<n;i++)
    {
        printf("%d ",a[i]);
    }
}

return 0;
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