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Assignment 2b

UNIX Process Control- Program-II.

Execv.c code:

```
/* ========Implementation of execve() system call========*/
/*Parent sorts array and pass to child for binary search*/

#include<stdio.h>
#include<string.h>
#include<unistd.h>        // For execve system call
#define MAX20

voidquicksort(inta[MAX],int,int);            // Protype of Quicksort

int main()
{
        int a[MAX],n,i;
        char str[5];
        char *str1[MAX];
        char ch;
        pid_tpid;

        //Accepting the array elements from user

        printf("\n\tEnter the number of elements : ");
        scanf("%d",&n);

        printf("\n\tEnter the %d Elements : \n",n);
        for(i=0;i<n;i++)
        {
```

```
printf("\t"); scanf("%d",&a[i]);
        }

        /* =====Performing fork() system call==== */

        pid=fork();

        if(pid<0)           // If Process not createdsuccessfully
        {
                printf("Error while creating new process...!!!!");
        }

        elseif(pid>0)     // For Parentprocess
        {
                quicksort(a,0,n-1);         //Performing quick sort on anarray

                for(i=0;i<MAX;i++)          // String to be passed in execve
                        str1[i]=NULL;     // call should terminated byNULL

                /* ===Converting integer array into array of strings=== */

                for(i=0;i<n;i++)
                {
                        sprintf(str,"%d",a[i]);
                        str1[i]=strdup(str);









                }
```

```
                execve("child",str1,NULL);          // Call toexecve
        }
        return 0;
}

/* ======Definition of Quick sort====== */

void quicksort(int a[MAX],int f,int l)
{
        int i,j,pivote,temp;
        if(f<l)
        {
                i=pivote=f;
                j=l;
                while(i<j)
                {
                        while(a[i]<a[pivote] &&i<l)
                                i++;
                        while(a[j]>a[pivote])
                                j--;
                        if(i<j)
                        {
                                temp=a[j];
                                a[j]=a[i];
                                a[i]=temp;
                        }



                }
```

```
                temp=a[j];
                a[j]=a[pivote];
                a[pivote]=temp;
                quicksort(a,f,j-1);
                quicksort(a,j+1,l);
        }
}
```

Child.c code:

```
/* ======Child Process for Binary search====== */

#include<stdio.h>
#define MAX 20

int bsearch(int a[MAX],int f,intl,ints);      // Protype for Binary search

int main(intargc,char*argv[])                 // Arguments passed by execvecall
{
        int i,s,f;
        int a[MAX];

        for(i=0;i<argc;i++)                   // Converting Constant strings
                a[i]=atoi(argv[i]);           // into array ofintegers

        printf("\n\tThe sorted array is : \n");

        for(i=0;i<argc;i++)
```

```
		printf("\t%d",a[i]);

		/* =======Performing Binary search on an array======== */

		printf("\n\tEnter the element you want to search : ");
		scanf("%d",&s);

		printf("\n");

		f=bsearch(a,0,argc-1,s);

		if(f!=-1)
			printf("\n\tThe element %d Found at %d location..!!!!\n",s,f+1);
		else
			printf("\n\tThe element %d is not present in the list..!!!!\n\n",s);

		printf("\n");
		return 0;
}

/* ====Defination of binary search==== */

int bsearch(int a[MAX],int f,intl,int s)
{
		int mid;
		while(f<=l)
		{
```

```
                mid=(f+l)/2;
                if(s==a[mid])
                        return(mid);
                else if(s<a[mid])
                        l=mid-1;
                else
                        f=mid+1;
        }
        return -1;
}
```

Output:

```
~$ gcc -o ./child child.c
child.c: In function ‘main’:
child.c:15:8: warning: implicit declaration of function ‘atoi’ [-Wimplicit-function-declaration]
   15 | a[i]=atoi(argv[i]); // into array of integers
      |      ^~~~
~$ gcc -o child child.c
child.c: In function ‘main’:
child.c:15:8: warning: implicit declaration of function ‘atoi’ [-Wimplicit-function-declaration]
   15 | a[i]=atoi(argv[i]); // into array of integers
      |      ^~~~
~$ gcc -o ex execv.c
~$ ./ex

    Enter the number of elements : 5

    Enter the 5 Elements :
```

12

4

50

6

1

The sorted array is :

1 4 6 12 50

Enter the element you want to search : 6

The element 6 Found at 3 location..!!!!