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078

LAB EXAM

Concepts of Programming & Operating System

1. Write a program to read the elements into an array and print it. Remove the duplicate elements in the array and return the new length of the array and print the elements.

```
package com.oslab.entity;

import java.util.Scanner;

public class program {
	public static int removeDuplicates(int[] arr) {
	  int newLength = arr.length;


	  for (int i = 0; i < newLength; i++) {
	      for (int j = i + 1; j < newLength; j++) {
	          if (arr[i] == arr[j]) {
	                      for (int k = j; k < newLength - 1; k++) {
	                  arr[k] = arr[k + 1];
	              }
	              newLength--;
	              j--;
	          }
	      }
	  }
	  System.out.print("Unique elements: ");
	  for (int i = 0; i < newLength; i++) {
	      System.out.print(arr[i] + " ");
	  }
	  System.out.println();

	  // Return the new length of the array
	  return newLength;
    }
    public static void main(String[] args) {
       Scanner scanner = new Scanner(System.in);


    System.out.print("Enter the number of elements in the array: ");
    int n = scanner.nextInt();
    int[] arr = new int[n];
    System.out.print("Enter the elements of the array: ");
    for (int i = 0; i < n; i++) {
        arr[i] = scanner.nextInt();
    }
```

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```
    System.out.print("Original array: ");
    for (int element : arr) {
        System.out.print(element + " ");
    }
    System.out.println();


    int newLength = removeDuplicates (arr);
    System.out.println("New length of the array: " +newLength);
}
}
```

Output:

```
Enter the number of elements in the array: 10
Enter the elements of the array: 1 1 2 3 3 4 5 6 6 7
Original array: 1 1 2 3 3 4 5 6 6 7
Unique elements: 1 2 3 4 5 6 7
New length of the array: 7
```

2. Write a C Program to create a child process which calculates the area of rectangle and parent process will prints the Area result after the child execution completed. Implement it using fork system call. Area = Length x Breadth.

```
#include <stdio.h>

#include <sys/wait.h>

#include <sys/shm.h>

#include <unistd.h>


int main() {
```

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```
    int l, b, area;
    int shmid;
    int *shmptr;
    shmid = shmget(IPC_PRIVATE, sizeof(int), IPC_CREAT | 0666);
    shmptr = shmat(shmid, NULL, 0);
    int pid = fork();
    if (pid == 0) {
        printf("Enter the length of the rectangle: ");
        scanf("%d", &l);
        printf("Enter the breadth of the rectangle: ");
        scanf("%d", &b);
        area = l * b;
        *shmptr = area;
        shmdt(shmptr);
    }
    else {
        wait(NULL);
        printf("The area of the rectangle is: %d\n", *shmptr);
        shmctl(shmid, IPC_RMID, NULL);
    }
    return 0;
}
```

Output:

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