

## Lab Exam

### Concepts of Programming & Operating System

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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.array;

import java.util.Scanner;

public class ArrayDemo {

    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();

}

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: 5
Enter the elements of the array: 12
15
45
63
45
Original array: 12 15 45 63 45
Unique elements: 12 15 45 63
New length of the array: 4

```

**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 <unistd.h>

int main() {

```

```
int length, breadth;

printf("Enter the length of the rectangle: ");
scanf("%d", &length);

printf("Enter the breadth of the rectangle: ");
scanf("%d", &breadth);

int pid = fork();

    int area = length * breadth;

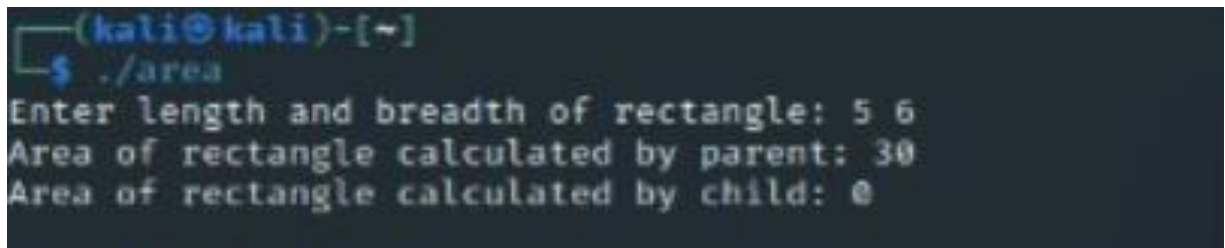
    printf("Area of the rectangle (calculated by child process): %d\n", area);
} else {

    wait(NULL);

    printf("Area of the rectangle (printed by parent process): %d\n", length*breadth);
}

return 0;
}
```

**Output:**



```
(kali㉿kali)-[~]
$ ./area
Enter length and breadth of rectangle: 5 6
Area of rectangle calculated by parent: 30
Area of rectangle calculated by child: 0
```