School of Mechanical & Manufacturing Engineering (SMME),

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Program: BE-Aerospace   Section: AE-01

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Course Title: Fundamentals of Programming (CS-109)

"Assignment 01"

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Question 01

Write a C++ program, take two strings as input from user and check if both strings are equal or not. If they are equal, make them unequal by rotating string. e.g., Hello is turned into olleH etc.

Answer:

For this purpose, two strings are taken as inputs using arrays, if their corresponding elements of the same index are equal one of them is rotated which makes them unequal.

CODE:

```cpp
//Khadija Tul Kubra 458986

//Equal string or rotate string

#include <iostream>

using namespace std;

int main()

{

int x;

cout<<"Enter the number of letters in longest string."<<endl;

cin>>x;

char A[x+1],B[x+1];

cout<<"Enter both strings:"<<endl;

cin>>A;

cin>>B;

int count=0;

for(int i=0;i<=x;i++)

{

if(A[i]!=B[i])

count++;

}

if(count==0)

{

for(int i=0;i<=x/2;i++)
```

```cpp
swap(A[i],A[x-i]);
for(int i=0;i<=x;i++)
cout<<A[i];
cout<<endl;
cout<<"Strings by made unequal by rotating one.";
cout<<""<<endl;
}
else
cout<<"The strings are unequal"<<endl;
return 0;
}
```

OUTPUT:

Case1:

Enter the number of letters in longest string.

6

Enter both strings:

basilk

basilk

klisab

Strings by made unequal by rotating one.

Case2:

Enter the number of letters in longest string.

5

Enter both strings:

basil

kasim

The strings are unequal

Question 02

Write a C++program for a string which may contain lowercase and uppercase characters. The task is to remove all duplicate characters from the string and find the resultant string.

Answer:

```cpp
//Khadija Tul Kubra 458986

//Equal string or rotate string

#include <iostream>

using namespace std;

int main()

{

string input;


cout << "Enter the string: ";

cin >> input;


string result = "";

bool present[256] = { false };


for (int i = 0; i < input.length(); ++i) {

if (!present[tolower(input[i])]) {

result += input[i];

present[tolower(input[i])] = true;

}

}

cout << "Resultant string after removing duplicates: " << result <<endl;

}
```

OUTPUT:

Enter the string: heeker

Resultant string after removing duplicates: hekr

Question 03

Suppose an integer array a[5] = {1,2,3,4,5}. Add more elements to it and display them in C++.

Answer:

Initialize the first 5 values of the array as given in questions and then take the further values of array from the user.

CODE

```cpp
// Khadija tul kubra 458986

//Remove duplicates in string

#include <iostream>

using namespace std;

int main()

{

int a[5] = {1,2,3,4,5};

int x;

cout<<"Enter the number of integers you want to add in the given array a[5] = {1,2,3,4,5}"<<endl;

cin>>x;

int b[5+x];

for(int i=0;i<5;i++)

b[i]=a[i];

cout<<"Enter the integers;"<<endl;

for(int i=5;i<5+x;i++)

cin>>b[i];

cout<<"The resultant array is"<<endl;

for(int i=0;i<x+5;i++)

cout<<b[i];

cout<<endl;

}
```

OUTPUT

Enter the number of integers you want to add in the given array a[5] = {1,2,3,4,5}

4

Enter the integers;

6

7

8

9

The resultant array is

123456789

Question 04

Write a C++ program that uses a while loop to find the largest prime number less than a given positive integer N. Your program should take the value of N as input from the user and then find the largest prime number less than or equal to N. You are not allowed to use any library or pre-existing functions to check for prime numbers.

Answer:

CODE

```cpp
// khadija tul kubra 458986

//largest prime number less than the given number

#include <iostream>

using namespace std;

int main()

{

cout<<"Enter the positive integer"<<endl;

int x;

cin>>x;

while(x>2)

{

int count=0;

for(int i=2;i<x;i++)
```

```
{

if(x%i==0)

count++;

}

if(count==0)

{

cout<<"The largest prime number less than or equal to given positive integer is "<<x<<endl;

break;

}

x--;

if(count==0)

break;

}

}
```

OUTPUT
Enter the positive integer
50
The largest prime number less than or equal to given positive integer is 47

Question 05

 Implement Bubble Sort on an array of 6 integers.
Answer:

Use two for loops after taking 6 integers array from the user and swap the terms if the term is greater than the next one until the array is sorted

CODE

```
//Khadija Tul Kubra 458986

//BUBBLE SORT

#include <iostream>

using namespace std;

int main()

{
```

```cpp
int A[6];

cout<<"Enter the array"<<endl;

for(int i=0;i<6;i++)

cin>>A[i];

for(int i=0;i<6;i++)

{

for(int j=0;j<6;j++)

{

if(A[j]>A[j+1])

swap(A[j],A[j+1]);

}

}

cout<<"The resultant array is ";

for(int i=0;i<6;i++)

cout<<A[i];

}
```

OUTPUT:

Enter the array

7

3

9

2

7

5

The resultant array is 235779

Question 06

Solve any Aerospace/Real Life Problem using C++ Programming.

Answer:

CODE:

```cpp
//Khadija Tul Kubra 458986
```

```cpp
//Analysis of whether of week
#include <iostream>
using namespace std;
int main()
{
int A[7]={1,2,3,4,5,6,7};
int B[7];
cout<<" Enter the temperature of each day of the week "<<endl;
for(int i=0;i<7;i++)
cin>>B[i];
for(int i=0;i<7;i++)
cout<<A[i]<<" "<<B[i]<<endl;
int sum = 0;
for (int i=0; i<7; i++)
sum += B[i];
cout<<"The average temperature of the week was "<<sum/7<<endl;
if(sum/7<=15)
cout<<"The week was comparatively cold."<<endl;
if(sum/7<=27&&sum/7>15)
cout<<"The week was comparatively moderate."<<endl;
if(sum/7>27)
cout<<"The week was comparatively hot."<<endl;
}
```

OUTPUT:

Enter the temperature of each day of the week

34

23

34

45

12

23

24

1	34
2	23
3	34
4	45
5	12
6	23
7	24

The average temperature of the week was 27

The week was comparatively moderate.