ASSIGNMENT 1:

// Accept 2 input strings and check whether 2nd string exists within the 1st string. Display

//the position of existence. [K3]

# include <iostream>

# include <stdbool.h>

#include <string>

using *namespace* std;

*int* main()

{

    string str1,str2;

    cout<<"Enter the first string";

    cin>>str1;

*bool* valid;

    cout<<"Enter the second string";

    cin>>str2;

*int* len1=str1.length();

*int* len2= str2.length();

    if (len1>len2){

        for (*int* i=0;i<=len1;++i){

                if(str1[i]==str2[0]){

                    valid=true;

                    for(*int* k=1;k<len2-1;++k){

                        if(str1[i+k]!=str2[k]){

                            valid=false;

                            break;

                        }

                    }

                    if(valid==true){

                        cout<<i;

                        break;

                    }

                }

            }

        }

    }

ALGORTITHM:

1.start

2.Get input of two strings from the user

3.Determine the length of both the strings and check if the first string is longer than the second one.

4.set i=0, when I is lesser than len1, repeat steps 4 to 8

5.set k=0, when k is lesser than len2(signifying the length of string 2) check if str1[i+k]==str1[k] if not set valid=false goto step 8

6.increment k by 1 and repeat steps 5 and 6

7.If valid is true print value of i

8.Increment value of I by 1

9.stop

#include <iostream>

using *namespace* std;

*struct* studdata {

*int* reg;

    string name;

    string dob;

*float* m1, m2, m3;

*float* total;

*float* avg;

*char* grade;

};

*int* main() {

*int* num;

    cout << "Enter the number of students: ";

    cin >> num;

    studdata \*arr1= new studdata[num];

    for (*int* i = 0; i < num; i++) {

        cout << "Enter details for student " << i + 1 << ":\n";

        cout << "Registration number: ";

        cin >> arr1[i].reg;

        cout << "Name: ";

        cin >> arr1[i].name;

        cout << "Date of Birth: ";

        cin >> arr1[i].dob;

        cout << "Marks in three subjects (m1 m2 m3): ";

        cin >> arr1[i].m1 >> arr1[i].m2 >> arr1[i].m3;

        // Calculate total and average

        arr1[i].total = arr1[i].m1 + arr1[i].m2 + arr1[i].m3;

        arr1[i].avg = arr1[i].total / 3.0;

        // Determine the grade

        if (arr1[i].avg >= 90) {

            arr1[i].grade = 'A';

        } else if (arr1[i].avg >= 80) {

            arr1[i].grade = 'B';

        } else if (arr1[i].avg >= 70) {

            arr1[i].grade = 'C';

        } else if (arr1[i].avg >= 60) {

            arr1[i].grade = 'D';

        } else {

            arr1[i].grade = 'F';

        }

    }

    // Display student details

    cout << "\nStudent Details:\n";

    for (*int* i = 0; i < num; i++) {

        cout << "\nStudent " << i + 1 << ":\n";

        cout << "Registration number: " << arr1[i].reg << endl;

        cout << "Name: " << arr1[i].name << endl;

        cout << "Date of Birth: " << arr1[i].dob << endl;

        cout << "Total Marks: " << arr1[i].total << endl;

        cout << "Average Marks: " << arr1[i].avg << endl;

        cout << "Grade: " << arr1[i].grade << endl;

    }

    return 0;

}

#include <iostream>

#include <string>

*class* Employee {

*private:*

    std::string firstName;

    std::string lastName;

*double* monthlySalary;

*public:*

    // Constructor

    Employee(const std::string& *first*, const std::string& *last*, *double* *salary*)

        : firstName(*first*), lastName(*last*) {

        setMonthlySalary(*salary*);

    }

    // Setters

*void* setFirstName(const std::string& *first*) {

        firstName = *first*;

    }

*void* setLastName(const std::string& *last*) {

        lastName = *last*;

    }

*void* setMonthlySalary(*double* *salary*) {

        if (*salary* > 0.0) {

            monthlySalary = *salary*;

        } else {

            monthlySalary = 0.0;

        }

    }

    // Getters

    std::string getFirstName() const {

        return firstName;

    }

    std::string getLastName() const {

        return lastName;

    }

*double* getMonthlySalary() const {

        return monthlySalary;

    }

    // Function to calculate yearly salary

*double* calculateYearlySalary() const {

        return monthlySalary \* 12;

    }

    // Function to give a 10% raise

*void* giveRaise() {

        monthlySalary \*= 1.1; // Increase by 10%

    }

    // Destructor

    ~Employee() {

        std::cout << "Destructor called for " << firstName << " " << lastName << std::endl;

    }

};

*int* main() {

    // Create two Employee objects

    Employee employee1("John", "Doe", 5000.0);

    Employee employee2("Jane", "Smith", 6000.0);

    // Display yearly salary for each employee

    std::cout << "Yearly salary for " << employee1.getFirstName() << " " << employee1.getLastName() << ": "

              << employee1.calculateYearlySalary() << std::endl;

    std::cout << "Yearly salary for " << employee2.getFirstName() << " " << employee2.getLastName() << ": "

              << employee2.calculateYearlySalary() << std::endl;

    // Give each employee a 10% raise

    employee1.giveRaise();

    employee2.giveRaise();

    // Display yearly salary after the raise

    std::cout << "\nAfter a 10% raise:\n";

    std::cout << "Yearly salary for " << employee1.getFirstName() << " " << employee1.getLastName() << ": "

              << employee1.calculateYearlySalary() << std::endl;

    std::cout << "Yearly salary for " << employee2.getFirstName() << " " << employee2.getLastName() << ": "

              << employee2.calculateYearlySalary() << std::endl;

    return 0;

}

#include <iostream>

#include <string>

using *namespace* std;

*int* main() {

    string firstString, secondString;

    // Input the first string

    cout << "Enter the first string: ";

    getline(cin, firstString);

    // Input the second string

    cout << "Enter the second string: ";

    getline(cin, secondString);

    // Find the position of the second string in the first string

    size\_t position = firstString.find(secondString);

    // Check if the second string exists in the first string

    if (position != string::npos) {

        cout << "The second string exists in the first string at position " << position << endl;

    } else {

        cout << "The second string does not exist in the first string." << endl;

    }

    return 0;

}

/\*e.

Define a class of employees. It should contain employee number, name, address, and the number of dependent

 for the employee. It should also contain functions to add and display information about the employees.

  Define an array of 20 employees. Now write a simple for loop to read information about the employees. Finally,

   display all employees with more than two dependents.

\*/

# include <iostream>

using *namespace* std;

*class* employee{

*private:*

        string emp\_name;

*int* emp\_num;

        string add;

*public:*

*int* dep;

*void* display()

        {

            cout<<"Name:"<<emp\_name<<"\n";

            cout<<"emp\_num:"<<emp\_num<<"\n";

            cout<<"address:"<<add<<"\n";

            cout<<"dependants:"<<dep<<"\n";

        }

*void* setdata(){

            cout<<"Enter the employee name";

            cin>>emp\_name;

            cout<<"Enter the employee num";

            cin>>emp\_num;

            cout<<"Enter the address";

            cin>>add;

            cout<<"Enter the dependents";

            cin>>dep;

        }

};

*int* main(){

    //Define an array of 20 employees lets keep it custom

*int* num;

    cout<<"Enter the number of employees";

    cin>>num;

    employee \*arr1=new employee [num];

    //employee \*arr1= new employee[num] gives no warnings but employee arr1[num] gives

    for(*int* i=0;i<num;i++){

        arr1[i].setdata();

    }

    //displaying data where dependancies >2:

    for(*int* i=0;i<num;i++){

        if(arr1[i].dep>=2){

            arr1[i].display();

        }

    }

    return 0;

}

/\*e.

Define a class of employees. It should contain employee number, name, address, and the number of dependent

 for the employee. It should also contain functions to add and display information about the employees.

  Define an array of 20 employees. Now write a simple for loop to read information about the employees. Finally,

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# include <iostream>

using *namespace* std;

*class* employee{

*private:*

        string emp\_name;

*int* emp\_num;

        string add;

*public:*

*int* dep;

*void* display()

        {

            cout<<"Name:"<<emp\_name<<"\n";

            cout<<"emp\_num:"<<emp\_num<<"\n";

            cout<<"address:"<<add<<"\n";

            cout<<"dependants:"<<dep<<"\n";

        }

*void* setdata(){

            cout<<"Enter the employee name";

            cin>>emp\_name;

            cout<<"Enter the employee num";

            cin>>emp\_num;

            cout<<"Enter the address";

            cin>>add;

            cout<<"Enter the dependents";

            cin>>dep;

        }

};

*int* main(){

    //Define an array of 20 employees lets keep it custom

*int* num;

    cout<<"Enter the number of employees";

    cin>>num;

    employee \*arr1=new employee [num];

    //employee \*arr1= new employee[num] gives no warnings but employee arr1[num] gives

    for(*int* i=0;i<num;i++){

        arr1[i].setdata();

    }

    //displaying data where dependancies >2:

    for(*int* i=0;i<num;i++){

        if(arr1[i].dep>=2){

            arr1[i].display();

        }

    }

    return 0;

}

//6. Write a program to create a class and a friend function that reads a four-digit number

//(such 2012) as a String and then display one digit per line like so: 2 0 1 2 Then count

//and print the sum of the digits. [K4]

//

#include <iostream>

# include <string>

using *namespace* std;

*class* input{

*public:*

        string num1;

*int* number;

*int* sum;

    input(string *n1*){

        num1=*n1*;

        number=stoi(num1);

        sum=0;

    }

    friend *void* display(input & *obj1*);

    friend *void* sum\_of\_digits(input & *obj1*);

};

*void* display(input & *obj1*){

        string num1;

        num1=*obj1*.num1;

*int* len1=(*obj1*.num1).length();

        for(*int* i=0;i<len1;i++){

            cout<<num1[i]<<"\n";

        }

        //cout<<(int) obj1.num1;

    }

*void* sum\_of\_digits(input & *obj1*){

        string num1;

        num1=*obj1*.num1;

*int* len1;

*int* rem;

*int* sum=0;

        len1=num1.length();

        //Not actually required

        cout<<"The length of the number is "<<len1;

*int* number;

        number=*obj1*.number;

        while(number>0){

            rem=number%10;

            number=number/10;

            sum+=rem;

        }

        cout<<"The sum of digits is "<<sum;

    }

*int* main()

{

    cout<<"Enter the number ";

    string num1;

    cin>>num1;

    input obj1(num1);

    display(obj1);

    sum\_of\_digits(obj1);

}

#include <iostream>

using *namespace* std;

*int* main() {

*int* num;

*bool* valid;

    cout << "Enter the limit of prime numbers: ";

    cin >> num;

*int* limit = 2;

    while (num > 0) {

        valid = false;

        for (*int* i = 2; i <= limit / 2 && i != 0; i++) {

            if (limit % i == 0) {

                // number is not prime

                valid = true;

                break;

            }

        }

        if (!valid) {

            // it's a prime

            cout << limit << " ";

            --num;

        }

        ++limit;

    }

    return 0;

}