**University Of Engineering and technology Peshawar**

**Lab Task #01**

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**Section: A**

**Course: Data Structure and Algorithm**

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**Question #01**

***Function declaration***

* Return type: The data type of the value that the function returns. If the function does not return a value, the return type is Void
* Function name: The name of the function. Function names must be unique within the scope in which they are declared.
* Parameter list: A list of the parameters that the function accepts. Each parameter has a data type and a name.
* Note: function declaration has semicolon at end

**Question #02**

***Function definition***

* Return type: The data type of the value that the function returns. If the function does not return a value, the return type is Void
* Function name: The name of the function. Function names must be unique within the scope in which they are defined.
* Parameter list: A list of the parameters that the function accepts. Each parameter has a data type and a name.
* Function body: The code that the function executes when it is called. The function body is enclosed in curly braces { }

**Question #03**

#include <iostream>

using namespace std;

void displayfloat(); //function declaration

int main(){

displayfloat(); //function call

}

// function definition

void displayfloat(){

float num;

cout<<"please enter float number";

cin>>num;

cout<<"the number is -> " <<num;

}

**Question #04**

#include <iostream>

using namespace std;

void DisplaySumOfInteger(); //function declaration

int main(){

DisplaySumOfInteger(); //function call

}

// function definition

void DisplaySumOfInteger(){

int num1,num2;

cout<<"please enter num1 :" <<endl;

cin>>num1;

cout<<"please enter num2 :" <<endl;

cin>>num2;

cout<<"the sum is -> " <<num1+num2;

}

**Question #05**

#include <iostream>

using namespace std;

void DisplayLarger(); //function declaration

int main(){

DisplayLarger(); //function call

}

//function definiton

void DisplayLarger(){

char ch1,ch2;

cout<<"please enter ch1 :" <<endl;

cin>>ch1;

cout<<"please enter che2 :" <<endl;

cin>>ch2;

if(ch1>ch2) cout<<"the greater character is " <<ch1;

else cout<<"the greater character is " <<ch2;

}

**Question # 06**

#include <iostream>

using namespace std;

// Function Declarations

void addFractions(int num1, int den1, int num2, int den2);

void subtractFractions(int num1, int den1, int num2, int den2);

void multiplyFractions(int num1, int den1, int num2, int den2);

void divideFractions(int num1, int den1, int num2, int den2);

void addFraction(int num1, int den1, int num2);

void subFraction(int num1, int den1, int num2);

// Main function

int main() {

int choice;

int num1, den1, num2, den2;

do {

cout << "Fraction Calculator Menu:" << endl;

cout << "1. Add Fractions" << endl;

cout << "2. Subtract Fractions" << endl;

cout << "3. Multiply Fractions" << endl;

cout << "4. Divide Fractions" << endl;

cout << "5. x/y + x" << endl;

cout << "6. x/y - x" << endl;

cout<< "7 exit programm";

cout << "Enter your choice: ";

cin >> choice;

if (choice >= 1 && choice <= 4) {

cout << "Enter the first fraction (numerator denominator): ";

cin >> num1 >> den1;

cout << "Enter the second fraction (numerator denominator): ";

cin >> num2 >> den2;

}

else if(choice >4 && choice <= 6){

cout << "Enter the first fraction (numerator denominator): ";

cin >> num1 >> den1;

cout << "Enter the second fraction (numerator denominator): ";

cin >> num2 ;

}

switch (choice) {

case 1:

addFractions(num1, den1, num2, den2);

break;

case 2:

subtractFractions(num1, den1, num2, den2);

break;

case 3:

multiplyFractions(num1, den1, num2, den2);

break;

case 4:

divideFractions(num1, den1, num2, den2);

break;

case 5:

addFraction(num1, den1, num2);

break;

case 6:

subFraction(num1,den1,num2);

break;

case 7:

cout<<"bye programm exit";

break;

default:

cout << "Invalid choice. Please try again." << endl;

}

} while (choice != 7);

return 0;

}

// Function Definitions

void addFraction(int num1, int den1, int num2) {

int result\_num = num1\*den1+num2;

int result\_den = den1;

cout << "Result: " << result\_num << "/" << result\_den << endl;

}

void subFraction(int num1, int den1, int num2) {

int result\_num = num1\*den1-num2;

int result\_den = den1;

cout << "Result: " << result\_num << "/" << result\_den << endl;

}

// Function to add two fractions

void addFractions(int num1, int den1, int num2, int den2) {

int result\_num = num1 \* den2 + num2 \* den1;

int result\_den = den1 \* den2;

cout << "Result: " << result\_num << "/" << result\_den << endl;

}

// Function to subtract two fractions

void subtractFractions(int num1, int den1, int num2, int den2) {

int result\_num = num1 \* den2 - num2 \* den1;

int result\_den = den1 \* den2;

cout << "Result: " << result\_num << "/" << result\_den << endl;

}

// Function to multiply two fractions

void multiplyFractions(int num1, int den1, int num2, int den2) {

int result\_num = num1 \* num2;

int result\_den = den1 \* den2;

cout << "Result: " << result\_num << "/" << result\_den << endl;

}

// Function to divide two fractions

void divideFractions(int num1, int den1, int num2, int den2) {

// Check for division by zero

if (num2 == 0) {

cout << "Error: Division by zero is not allowed." << endl;

return;

}

int result\_num = num1 \* den2;

int result\_den = den1 \* num2;

cout << "Result: " << result\_num << "/" << result\_den << endl;

}