//------------------------------------------------------------------

// File name: Exercise\_1\_to\_10.cpp

// Assign ID:

// Due Date: 16/05/24 at 11pm

//

// Purpose:

//

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//------------------------------------------------------------------

Exercise\_1

#include <iostream>

using namespace std;

int main(){

//1. Store

char choice;

//2. Inpput

do{

cout<<"Manu"<<endl;

cout<<"a"<<endl;

cout<<"b"<<endl;

cout<<"c"<<endl;

cout<<"d"<<endl;

cout<<"q = Exit"<<endl;

cout<<"Enter: ";

cin>>choice;

//3. Process

switch (choice)

{

case 'a':

// a.

for (int j = 1; j <=5; j++)

{

for (int i = 1; i <= 5; i++)

{

if(i>=j){

cout <<" \* ";

}

else{

cout<<" ";

}

}

cout<<endl;

}

/\* code \*/

break;

case 'b':

// b.

for (int j = 1; j <=5; j++)

{

for (int i = 1; i <= 5; i++)

{

if(i<=j){

cout <<" \* ";

}

else{

cout<< " ";

}

}

cout<<endl;

}

cout<<endl;

break;

case 'c':

// c.

for (int j = 1; j <=5; j++)

{

for (int i = 1; i <= 5; i++)

{

if(i>=j ){

cout <<" \* ";

}

else{

cout<< " ";

}

}

cout<<endl;

}

break;

case 'd':

// d.

for (int j = 1; j <=5; j++)

{

for (int i = 1; i <= 5; i++)

{

if(i>= 5 - j + 1 ){

cout <<" \* ";

}

else{

cout<< " ";

}

}

cout<<endl;

}

break;

default:

break;

}

}while (choice == 'a'|| choice=='b' ||choice =='c'|| choice == 'd');

return 0;

}

Exercise2

#include<iostream>

using namespace std;

int main() {

int count = 0;

for (int i = 100; i <= 999; i++) {

int hun = i / 100;

int ten = (i / 10) % 10;

int one = i % 10;

if (hun == ten || hun == one || ten == one) {

count++;

}

}

cout << "Number of integers with two identical figures: " << count << endl;

return 0;

}

Exercise\_3

#include<iostream>

using namespace std;

int main() {

//1. Store

int count = 0;

//2. Input

//3. Process

for (int i = 100; i <= 999; i++) {

int hun = i / 100;

int ten = (i / 10) % 10;

int one = i % 10;

if (hun != ten && hun != one && ten != one) {

count++;

}

}

//4. Output

cout << "Number of integers with all different figures: " << count << endl;

return 0;

}

Exerecise\_4

#include <iostream>

using namespace std;

int main() {

string integer;

string result;

// Input

cout << "Enter any integer: ";

cin >> integer;

// Process

for (char digit : integer) {

if (digit != '3' && digit != '6') {

result += digit;

}

}

// Output

if (result.empty()) {

cout << "After removing 3 and 6: 0" << endl;

} else {

cout << "After removing 3 and 6: " << result << endl;

}

return 0;

}

Exerise\_5

#include<iostream>

using namespace std;

int main(){

//1. Store

int A;

//2. Input

cout<<"Enter an integer A: ";

cin>>A;

//3. Process

cout<<"Integers B for which A is divisible by B \* B and not divisible by B \* B \* B: ";

for (int B = 1; B <= A; ++B) {

if (A % (B \* B) == 0 && A % (B \* B \* B) != 0) {

cout << B << " ";

}

}

cout << endl;

//4. Output

return 0;

}

Exersise\_6

#include <iostream>

using namespace std;

int main() {

//1. Store

int A;

int sum = 0;

long cubeOfSum;

long A\_squared;

//2. Input

cout << "Enter an integer A: ";

cin >> A;

int originalA = A;

//3. Process: Calculate the sum of digits of A

while (A != 0) {

int digit = A % 10;

A /= 10;

sum += digit;

cout<<digit<<endl;

}

// Calculate the cube of the sum of digits

cubeOfSum = sum\*sum\*sum;

// Calculate A squared

A\_squared = originalA \* originalA;

cout<<originalA<<endl;

// 4. Output

cout << "The cube of the sum of digits of " << originalA << " is " << cubeOfSum << endl;

cout << "A squared is " << A\_squared << endl;

if (cubeOfSum == A\_squared) {

cout << "The cube of the sum of digits of " << originalA << " equals " << originalA << " squared" << endl;

} else {

cout << "The cube of the sum of digits of " << originalA << " does not equal " << originalA << " squared" << endl;

}

return 0;

}

Exercise\_7

#include <iostream>

using namespace std;

int main() {

//1. Sotre

int A;

//2. Input

cout << "Enter an integer A: ";

cin >> A;

//3. Process and Output of Output divisors

cout << "Divisors of " << A << " are: ";

for (int i = 1; i <= A; ++i) {

if (A % i == 0) {

cout << i << " ";

}

}

cout << endl;

return 0;

}

Eexercise\_8

#include <iostream>

using namespace std;

int main() {

//1. Store

int A, B;

//2. Input

cout << "Enter the first integer (A): ";

cin >> A;

cout << "Enter the second integer (B): ";

cin >> B;

//3. Process and Output of Find common divisors

cout << "Common divisors of " << A << " and " << B << " are: ";

for (int i = 1; i <= min(A, B); ++i) {

if (A % i == 0 && B % i == 0) {

cout << i << " ";

}

}

cout << endl;

return 0;

}

Exercise\_9

#include <iostream>

#include <cmath> // For absolute value

using namespace std;

int main() {

int number, choice;

int digitCount = 0, digitSum = 0, zeroCount = 0;

double digitMean;

enum Menu{

countDigits=1,

sumDigits,

meanDigits,

countZero

};

cout << "Enter a number: ";

cin >> number;

// Ensure the number is positive for calculations

number = abs(number);

do {

cout << "\nMenu:\n";

cout << "1. Count digits\n";

cout << "2. Calculate sum of digits\n";

cout << "3. Calculate arithmetic mean of digits\n";

cout << "4. Count zeros\n";

cout << "0. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case countDigits:

// Count digits

int temp = number;

while (temp > 0) {

digitCount++;

temp /= 10;

}

cout << "Number of digits: " << digitCount << endl;

break;

case sumDigits:

// Calculate sum of digits

temp = number;

while (temp > 0) {

digitSum += temp % 10;

temp /= 10;

}

cout << "Sum of digits: " << digitSum << endl;

break;

case meanDigits:

// Calculate arithmetic mean of digits (if already counted)

if (digitCount > 0) {

digitMean = (double)digitSum / digitCount;

cout << "Arithmetic mean of digits: " << digitMean << endl;

} else {

cout << "Count the digits first (option 1).\n";

}

break;

case countZero:

// Count zeros

temp = number;

while (temp > 0) {

if (temp % 10 == 0) {

zeroCount++;

}

temp /= 10;

}

cout << "Number of zeros: " << zeroCount << endl;

break;

case 0:

cout << "Exiting...\n";

break;

default:

cout << "Invalid choice!\n";

}

} while (choice != 0);

return 0;

}