

```
//-----  
// File name: Exercise_1_to_10.cpp  
// Assign ID:  
// Due Date: 16/05/24 at 11pm  
//  
// Purpose:  
//  
// Author: Mr. KEO Sopahnit  
//-----
```

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;
}
```

Exercise_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;
}

```

```
#include <iostream>
using namespace std;

int main() {
    int cellSize = 3;

    for (int row = 0; row < 2; ++row) {
        for (int subRow = 0; subRow < cellSize; ++subRow) {
            for (int col = 0; col < 8; ++col) {
                for (int subCol = 0; subCol < cellSize; ++subCol) {
                    if ((row + col) % 2 == 0) {
                        cout << '*';
                    } else {
                        cout << '-';
                    }
                }
            }
            cout << endl;
        }
    }
}
```