

מטלה 9- עקרונות התכנות ושפת C++

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9.1

```
#include <iostream>

using namespace std;

const int ROWS = 5;
const int COLS = 5;

void insertNumByDiv(int* arr, int size, int jumpSize, int num);

int main()
{
    int array[ROWS][COLS];

    for (int i = 0; i < ROWS; i++)
    {
        cout << "Enter jump size and number for row " << i << ": ";
        int jumpSize, num;
        cin >> jumpSize >> num;
        insertNumByDiv(array[i], COLS, jumpSize, num);
    }

    cout << "The array is:" << endl;
    for (int i = 0; i < ROWS; i++)
    {
        for (int j = 0; j < COLS; j++)
        {
            cout << array[i][j] << " ";
        }
        cout << endl;
    }

    return 0;
}

void insertNumByDiv(int* arr, int size, int jumpSize, int num)
{
    for (int i = 0; i < size; i++)
    {
        if (jumpSize == 0 || i % jumpSize != 0)
        {
            arr[i] = -1;
        }
        else
        {
            arr[i] = num;
        }
    }
}
```

```
Enter jump size and number for row 0: 1 6
Enter jump size and number for row 1: 8 5
Enter jump size and number for row 2: 2 3
Enter jump size and number for row 3: 4 6
Enter jump size and number for row 4: 8 9
The array is:
6 6 6 6 6
5 -1 -1 -1 -1
3 -1 3 -1 3
6 -1 -1 -1 6
9 -1 -1 -1 -1
```

```
C:\Users\omer3\OneDrive\שולחן העבודה\C++\Q9?_1\Debug\Q9?_1.exe (process 36116) exited with code 0.
Press any key to close this window . . .
```

9.2

```
#include <iostream>
#include <cstring>

using namespace std;

const int SIZE = 10;

// function prototype
bool sameLetters(char* str1, char* str2);

int main() {
    char str1[SIZE], str2[SIZE]; // two strings with fixed size of 10

    cout << "Enter the first string (10 characters max): ";
    cin >> str1;

    cout << "Enter the second string (10 characters max): ";
    cin >> str2;

    if (sameLetters(str1, str2)) {
        cout << "The same characters exist in both strings." << endl;
    }
    else {
        cout << "The same characters do not exist in both strings." << endl;
    }

    return 0;
}

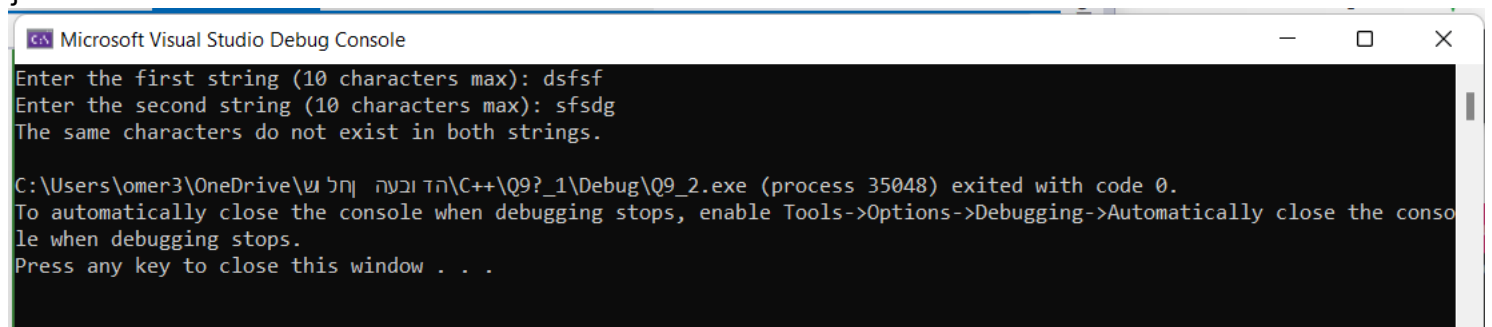
bool sameLetters(char* str1, char* str2)
{
    int count1[26] = { 0 };
    int count2[26] = { 0 };

    for (int i = 0; i < SIZE; i++) {
        count1[str1[i] - 'a']++;
    }

    for (int i = 0; i < SIZE; i++) {
        count2[str2[i] - 'a']++;
    }

    for (int i = 0; i < 26; i++) {
        if (count1[i] != count2[i]) {
            return false;
        }
    }

    return true;
}
```



The screenshot shows the Microsoft Visual Studio Debug Console window. It displays the output of the program: "Enter the first string (10 characters max): dsfsf", "Enter the second string (10 characters max): sfsdg", and "The same characters do not exist in both strings." Below this, it shows the command prompt path "C:\Users\omer3\OneDrive\שולחן העבודה\C++\Q9?_1\Debug\Q9_2.exe (process 35048) exited with code 0." and instructions: "To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops." and "Press any key to close this window . . .".

```
Microsoft Visual Studio Debug Console
Enter the first string (10 characters max): AABB
Enter the second string (10 characters max): AABB
The same characters exist in both strings.
C:\Users\omer3\OneDrive\מחלש\הדובעה\C++\Q9?_1\Debug\Q9_2.exe (process 40228) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

9.3

```
#include <iostream>
#include <string>

using namespace std;

bool IsPassStrong(char* password)
{
    if (strlen(password) < 5)
    {
        return false;
    }

    bool hasNumber = false;
    for (int i = 0; password[i] != '\0'; i++) {
        if (isdigit(password[i])) {
            hasNumber = true;
            break;
        }
    }
    if (!hasNumber) {
        return false;
    }

    bool hasUppercase = false;
    for (int i = 0; password[i] != '\0'; i++) {
        if (isupper(password[i])) {
            hasUppercase = true;
            break;
        }
    }
    if (!hasUppercase) {
        return false;
    }

    if (strpbrk(password, "%!#@") == NULL) {
        return false;
    }

    return true;
}

int main() {
    char password[16];

    cout << "Please enter a password: ";
    cin >> password;

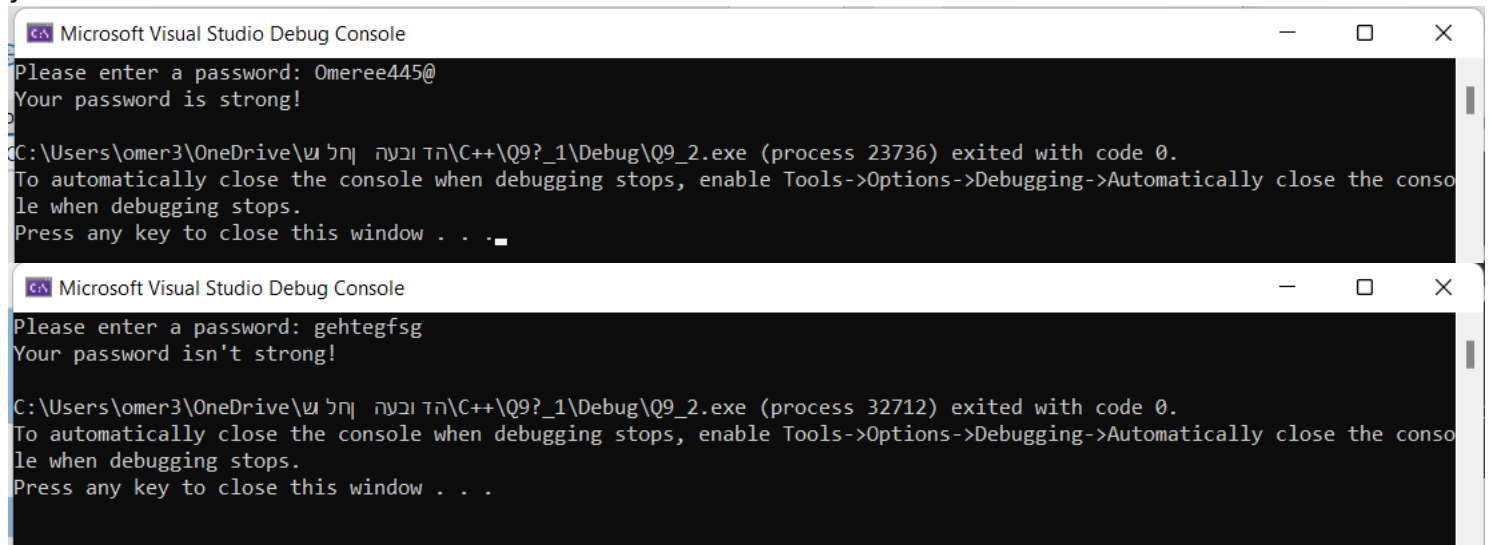
    if (IsPassStrong(password)) {
        cout << "Your password is strong!" << endl;
    }
}
```

```

else {
    cout << "Your password isn't strong!" << endl;
}

return 0;
}

```



9.4

```

#include <iostream>

using namespace std;

enum Ranks {
    JUNIOR = 5000,
    SENIOR = 20000,
    CEO = 70000
};

string determineRank(int salary) {
    if (salary <= JUNIOR) {
        return "junior";
    }

    else if (salary >= JUNIOR && salary <= SENIOR) {
        return "senior";
    }
    else if (salary >= CEO) {
        return "CEO";
    }

    else {
        return "you are fired";
    }
}

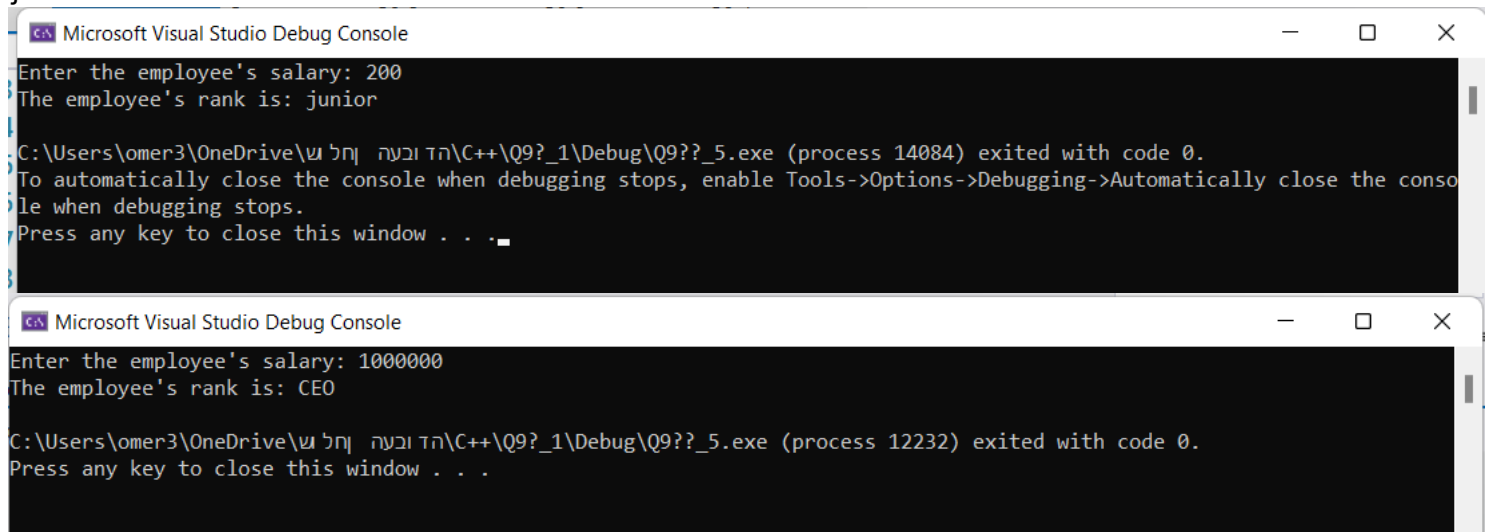
int main() {

    cout << "Enter the employee's salary: ";
    int salary;
    cin >> salary;

    string rank = determineRank(salary);
    cout << "The employee's rank is: " << rank << endl;
}

```

```
}  
    return 0;  
}
```



9.5

הקוד יתקמפל אך יש בו בעיות:

1. נעשה שימוש ב `void` כאשר הפונקציה היא קלט ופלט ולכן עליה להחזיר ערך.
2. `void main()` במקום `int main()`
3. חסר `return 0`

הפלט יהיה- `num1= 20 num2= 25 res= 1`