

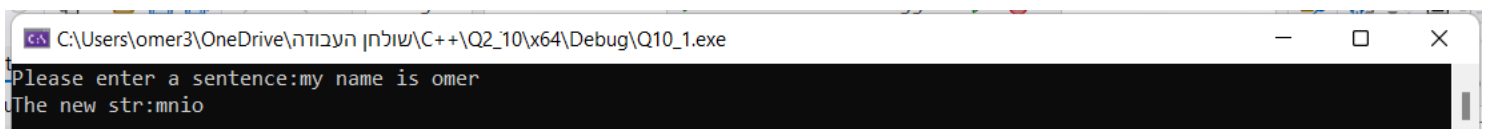
## מטלה 10 - עקרונות התכנות ושפת C++

עומר כהן- ת"ז 208715813

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### 10.1

```
#include <iostream>
#include <string.h>
using namespace std;
void newStr(char* struser);
void main()
{
    char string[50];
    cout << "Please enter a sentence:";
    cin.getline(string, 50);
    newStr(string);
}
void newStr(char* struser)
{
    int strlen_string = strlen(struser);
    int counter = 0;
    for (int i = 0; i < strlen_string; i++)
    {
        if (struser[i] == ' ')
        {
            counter++;
        }
    }
    char* ptrstr = new char[counter + 1];
    ptrstr[counter] = '\0'; int j = 1; int flag = 0;
    ptrstr[0] = struser[0];
    for (int i = 1; i < strlen_string; i++)
    {
        if (struser[i] == ' ') {
            for (int m = 0; m < j; m++) {
                if (struser[i + 1] == ptrstr[m]) {
                    flag = 1;
                }
            }
            if (flag == 0) {
                ptrstr[j] = struser[i + 1];
                ++j;
            }
            flag = 0;
        }
    }
    ptrstr[j] = '\0';
    cout << "The new str:";
    cout << ptrstr;
    delete[] ptrstr;
}
```

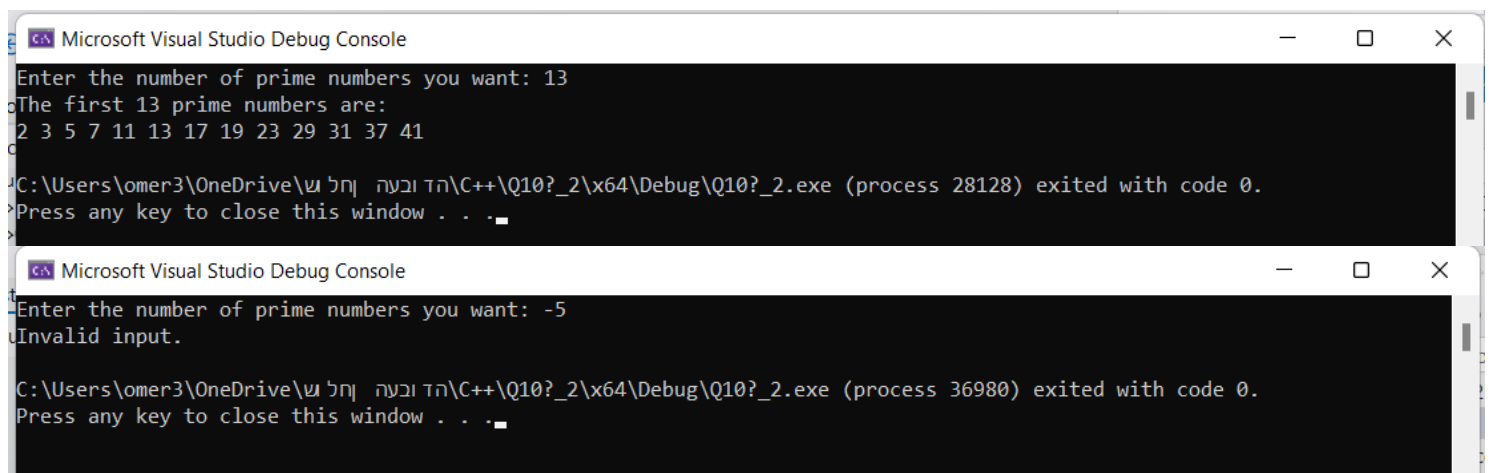


## 10.2

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

int* nPrimeNumbers(int n) {
    if (n <= 0) return nullptr;
    int* primes = new int[n];
    int count = 0;
    int i = 2;
    while (count < n) {
        bool isPrime = true;
        for (int j = 2; j <= i / 2; j++) {
            if (i % j == 0) {
                isPrime = false;
                break;
            }
        }
        if (isPrime) {
            primes[count] = i;
            count++;
        }
        i++;
    }
    return primes;
}

int main() {
    int n;
    cout << "Enter the number of prime numbers you want: ";
    cin >> n;
    int* primes = nPrimeNumbers(n);
    if (primes == nullptr) {
        cout << "Invalid input." << endl;
        return 0;
    }
    cout << "The first " << n << " prime numbers are:" << endl;
    for (int i = 0; i < n; i++) {
        cout << primes[i] << " ";
    }
    cout << endl;
    delete[] primes;
    return 0;
}
```



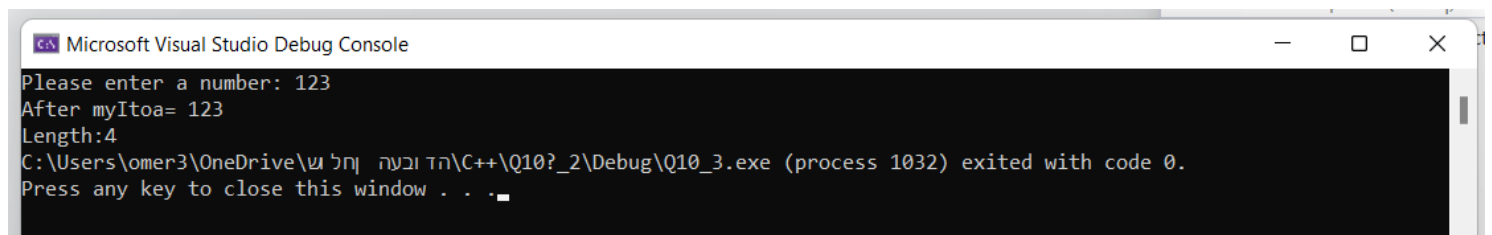
```
Microsoft Visual Studio Debug Console
Enter the number of prime numbers you want: 13
The first 13 prime numbers are:
2 3 5 7 11 13 17 19 23 29 31 37 41
C:\Users\omer3\OneDrive\שולחן עבודה\C++\Q10?_2\Debug\Q10?_2.exe (process 28128) exited with code 0.
Press any key to close this window . . .

Microsoft Visual Studio Debug Console
Enter the number of prime numbers you want: -5
Invalid input.
C:\Users\omer3\OneDrive\שולחן עבודה\C++\Q10?_2\Debug\Q10?_2.exe (process 36980) exited with code 0.
Press any key to close this window . . .
```

## 10.3

```
#include<iostream>
using namespace std;
void myitoa(int* number);
void main()
{
    int number;
    cout << "Please enter a number: ";
    cin >> number;
    myitoa(&number);
}
void myitoa(int* number)
{
    int nagative;
    int counter3;
    int counter2 = 0;
    int counter = 0;
    int temp;
    char* array;
    if (*number < 0)
    {
        nagative = *number;
        *number = *number * -1;
    }
    int p1 = *number;

    while (p1 > 0)
    {
        p1 = p1 / 10;
        counter++;
    }
    counter3 = counter;
    array = new char[counter + 1];
    array[counter] = '\0';
    while (*number > 0)
    {
        temp = *number % 10;
        *number = *number / 10;
        counter--;
        array[counter] = char(temp + 48);
        if (counter2 == counter)
        {
            cout << "After myItoa= " << array << endl;
            cout << "Length:" << &(array[counter3 + 1]) - &(array[0]);
        }
    }
    delete[]array;
}
```



Microsoft Visual Studio Debug Console

```
Please enter a number: 123
After myItoa= 123
Length:4
C:\Users\omer3\OneDrive\מחלש\הדורובעה\C++\Q10?_2\Debug\Q10_3.exe (process 1032) exited with code 0.
Press any key to close this window . . .
```

```
Microsoft Visual Studio Debug Console
Please enter a number: 165132
After myItoa= 165132
Length:7
C:\Users\omer3\OneDrive\חלש\הד\ובעה\חלש\C++\Q10?_2\Debug\Q10_3.exe (process 7968) exited with code 0.
Press any key to close this window . . .
```

## 10.4.1

10.4. לא להרצה:

10.4.1. מה תדפיס התוכנית הבאה:

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

int fun(const char* str1)
{
    const char* str2 = str1;
    while (*(str1++));
    return (str1 - str2 - 1);
}

void main()
{
    const char* str = "Hi";
    cout << fun(str);
}
```

א. 2

ב. 1

ג. -2

ד. 0

ה. -1

ו. אף תשובה אינה נכונה

## 10.4.2

10.4.2. נתונה הפונקציה הבאה :

```
1.  int* set_memory(int size)
2.  {
3.      int* ptr = new int(size);
4.      if (ptr) while (size != 0)
5.      {
6.          ptr[size--] = 0;
7.      }
8.      return ptr;
9.  }
```

איזה מהמשפטים הבאים נכון?

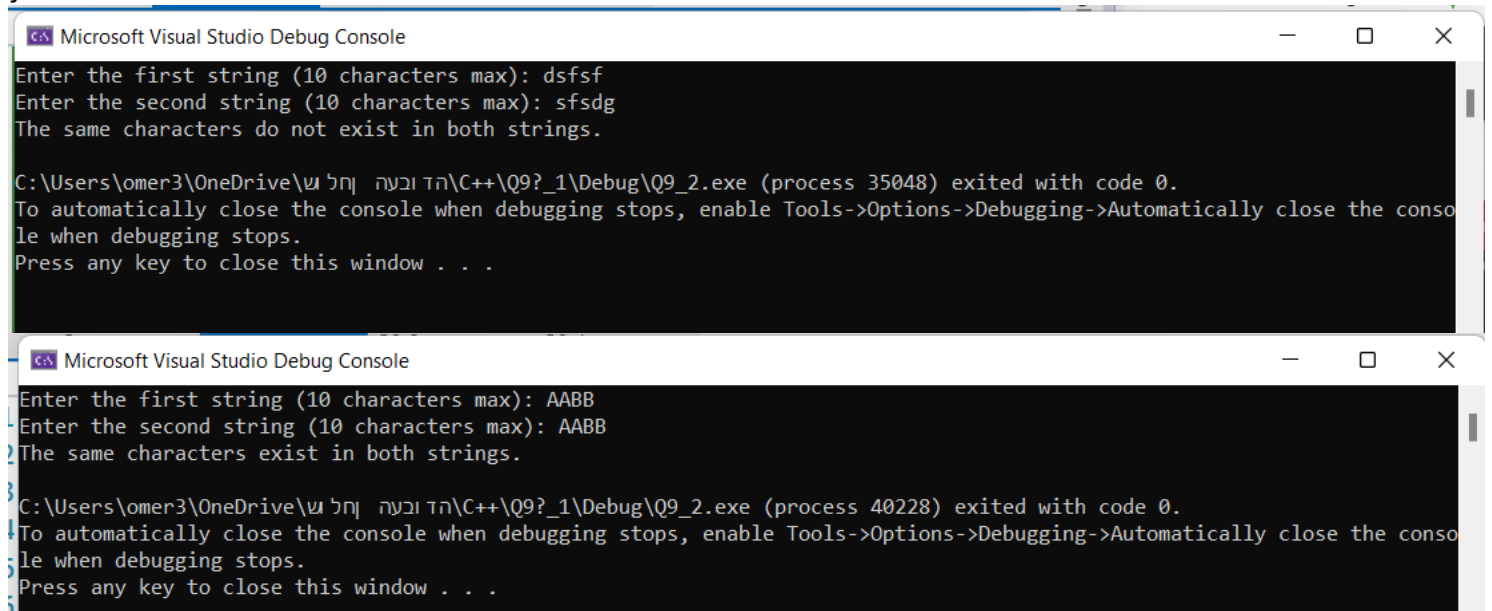
- א. ישנן שגיאות בשורות 3 ו-6.
- ב. ישנה שגיאה בשורה 6 בלבד.
- ג. ישנה שגיאה בשורה 4 בלבד.
- ד. ישנן שגיאות בשורות 4 ו-8.
- ה. ישנה שגיאה בשורה 3 בלבד.
- ו. אף תשובה אינה נכונה

## 10.2

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

int* nPrimeNumbers(int n) {
    if (n <= 0) return nullptr;
    int* primes = new int[n];
    int count = 0;
    int i = 2;
    while (count < n) {
        bool isPrime = true;
        for (int j = 2; j <= i / 2; j++) {
            if (i % j == 0) {
                isPrime = false;
                break;
            }
        }
        if (isPrime) {
            primes[count] = i;
            count++;
        }
        i++;
    }
    return primes;
}

int main() {
    int n;
    cout << "Enter the number of prime numbers you want: ";
    cin >> n;
    int* primes = nPrimeNumbers(n);
    if (primes == nullptr) {
        cout << "Invalid input." << endl;
        return 0;
    }
    cout << "The first " << n << " prime numbers are:" << endl;
    for (int i = 0; i < n; i++) {
        cout << primes[i] << " ";
    }
    cout << endl;
    delete[] primes;
    return 0;
}
```



Microsoft Visual Studio Debug Console

```
Enter the first string (10 characters max): dsfsf
Enter the second string (10 characters max): sfsdg
The same characters do not exist in both strings.

C:\Users\omer3\OneDrive\שולחן העבודה\C++\Q9?_1\Debug\Q9_2.exe (process 35048) 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 . . .
```

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\שולחן העבודה\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;
    }

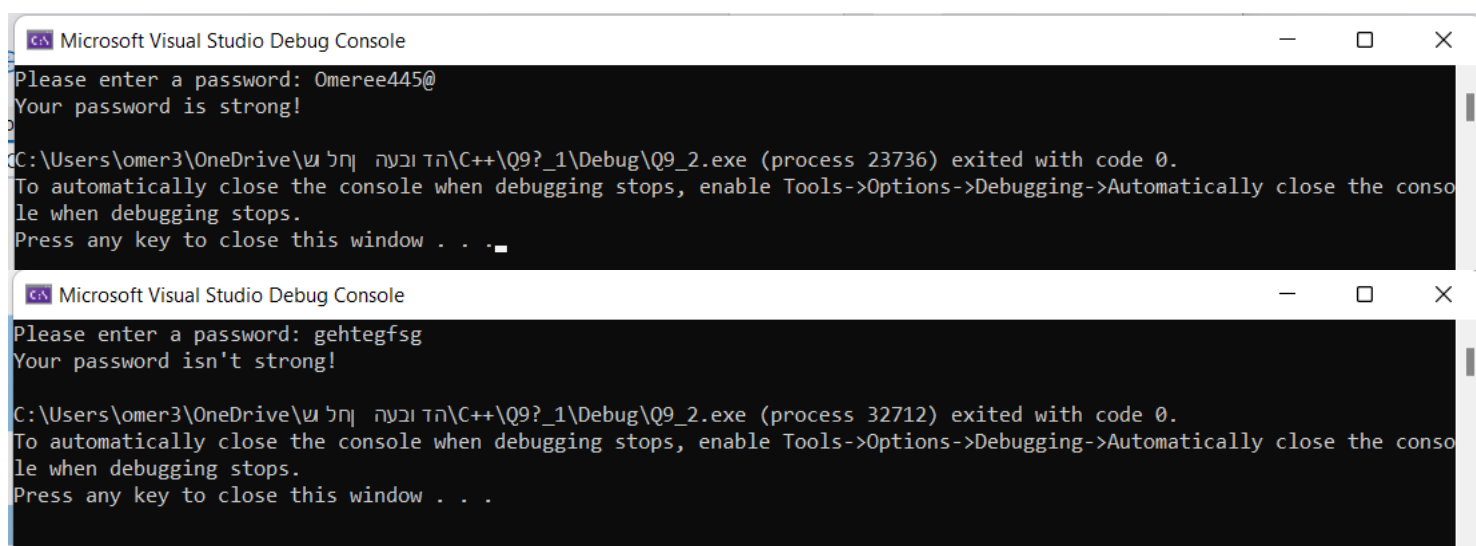
    return true;
}

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;
}
```



```
Microsoft Visual Studio Debug Console
Enter the employee's salary: 200
The employee's rank is: junior
C:\Users\omer3\OneDrive\שולחן עבודה\C++\Q9?_1\Debug\Q9?_5.exe (process 14084) 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 . . .

Microsoft Visual Studio Debug Console
Enter the employee's salary: 1000000
The employee's rank is: CEO
C:\Users\omer3\OneDrive\שולחן עבודה\C++\Q9?_1\Debug\Q9?_5.exe (process 12232) exited with code 0.
Press any key to close this window . . .
```

## 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. return 0 חסר

הפלט יהיה- num1= 20 num2= 25 res= 1