מטלה 10- עקרונות התכנות ושפת C++

עומר כהן- ת"ז 208715813

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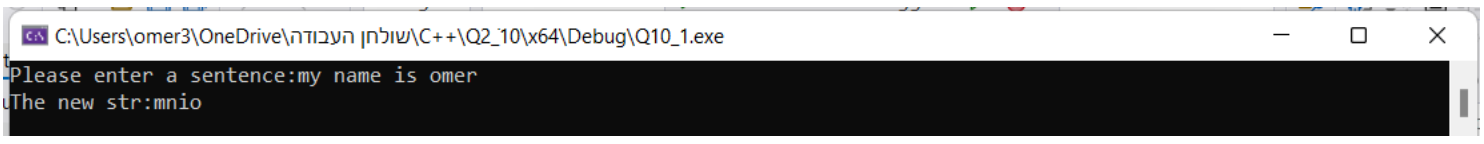
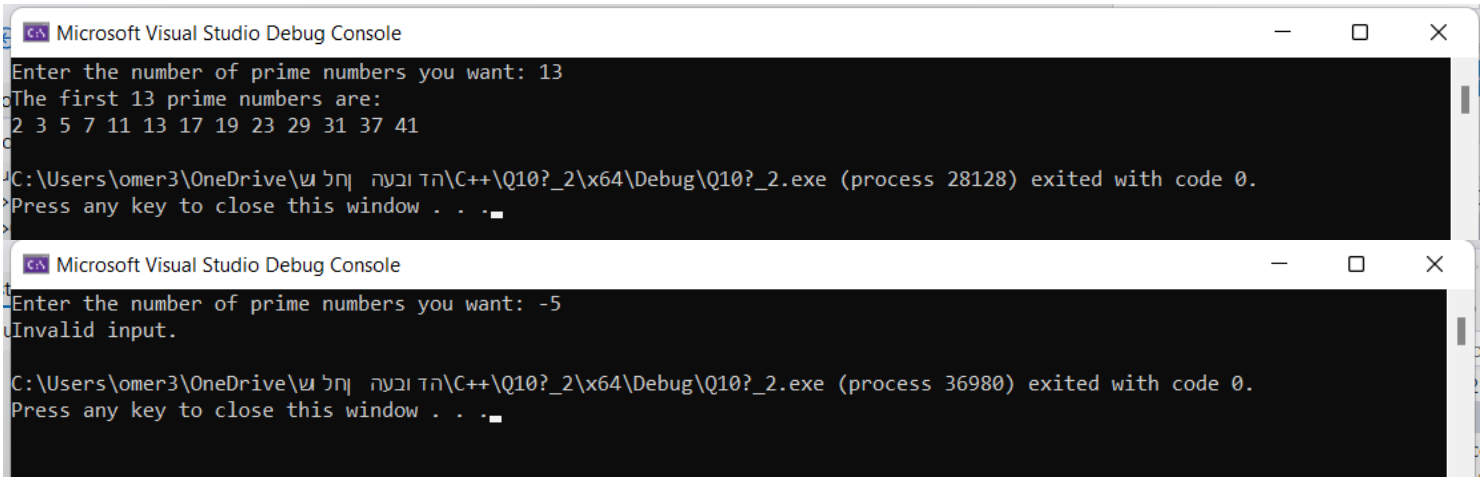
10.1

```
#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;
}
```



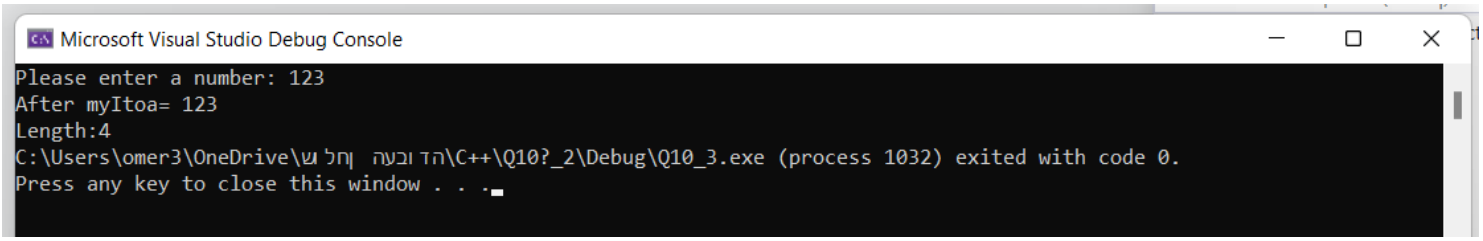
10.2

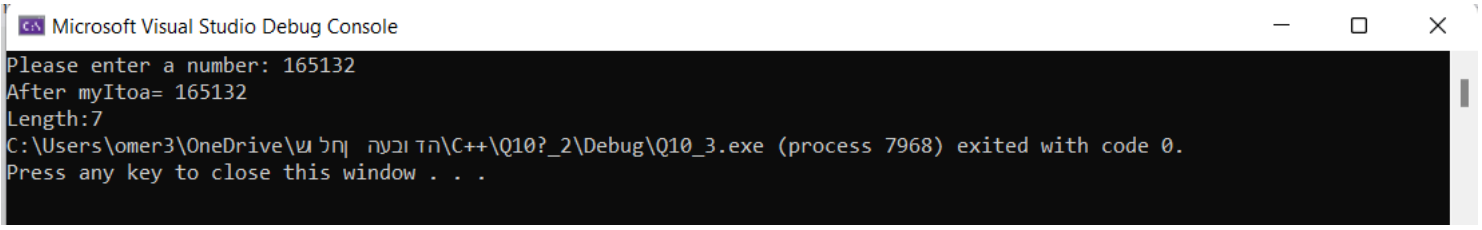
```cpp
#include <iostream>
#include <cstring>
using namespace std;

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;
}
```



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;
}
```





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:

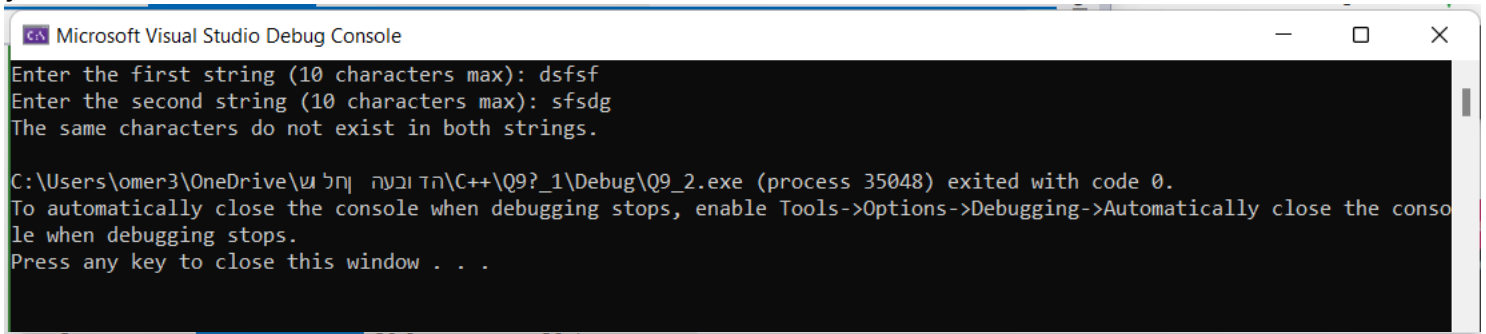
```
1.     int* set_memory(int size)
2.     {
3.           int* ptr = new int(size);
4.           if (ptr) while (size != 0)
5.           {
6.              ptr[size--] = 0;
7.           }
8.           return ptr;
9.     }
```

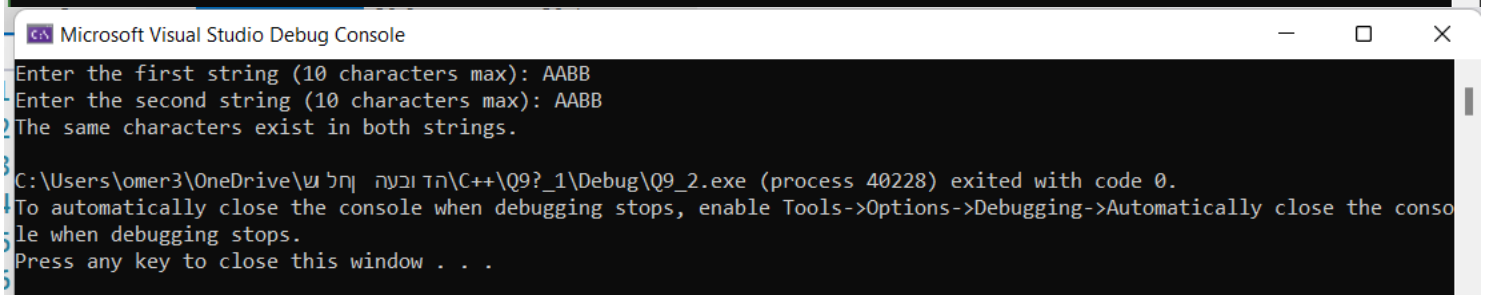
איזה מהמשפטים הבאים נכון?

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

```cpp
#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;
}
}
```



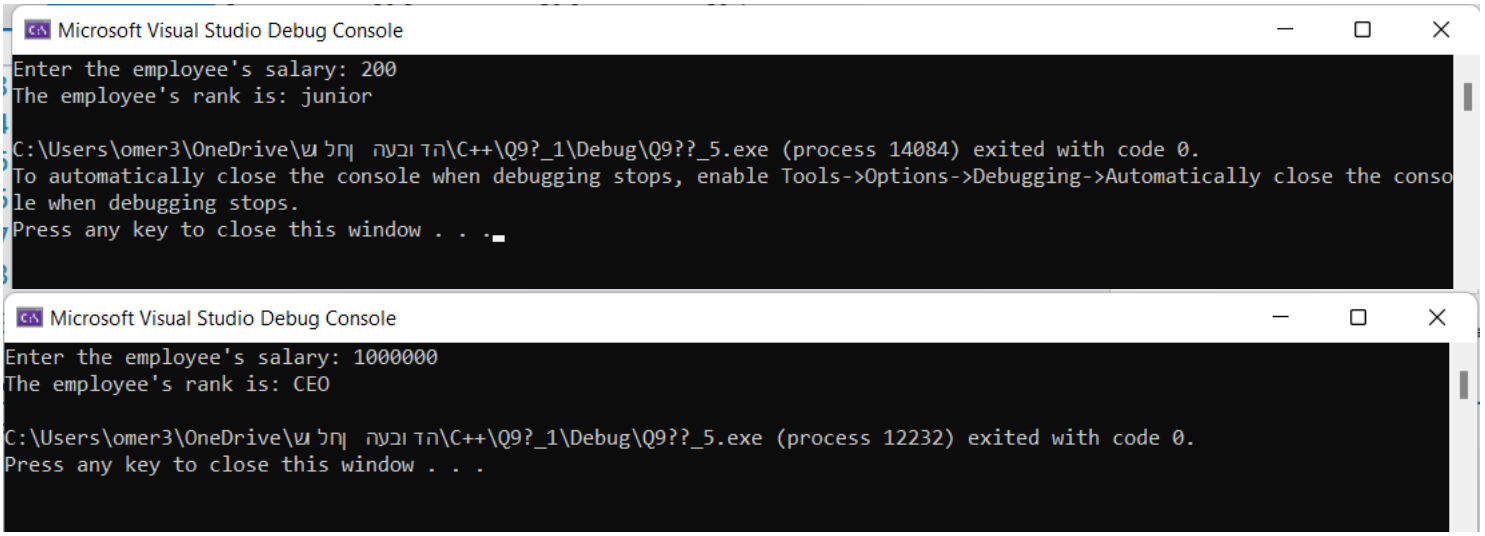


9.3

```cpp
#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

```cpp
#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. Int main() במקום void main()
3. חסר return 0

הפלט יהיה- num1= 20 num2= 25 res= 1