

1. (15 points) Write an assembly program to create the following I/O.

-----MENU-----

Food

Pizza (p).....3.25

Sandwich(s).....2.10

Drinks

Soda(s).....1.25

Juice (J).....1.75

Beer (b).....1.85

What is your name: John

What kind of food in uppercase (P=pizza, S=Sandwich)? S

How many? 3

What would you like to drink in uppercase (S=soda, J=Juice, B=Beer)? J

How many? 2

John, your total bill including 10% tax is \$ 10.78.

2. (15 points) Given the following two dimensional array

int a[2][4]={12,7,10,11,9,6,10,12};

Write assembly program to do the following and create the sample output.

- Display the array a
- Compute (using loop structures) and print the total number of **GREEN** and **LARGE** shirts.

	S	M	L	XL
Green	12	7	10	11
Blue	9	6	10	12

Sample output:

This is array a

12 7 10 11

9 6 10 12

Total number of GREEN shirts= 40

Total number of LARGE shirts=20

3. There are 4 candidates for Congress, the number of votes for all candidates are collected in the EAX register

Candidates	John	Mimi	Kia	Bill
EAX	1100 1111	1000 1000	1111 1111	1001 1011
Decimal values	207	136	255	155

Write an assembly program to use the content of the EAX register and determine who is the winner. Use: mov Eax, 11001111100010001111111110011011b to initialize the EAX register

Sample output

John 207 votes

Mimi 136 votes

Kia 255 votes

Bill 155 votes

The winner is Kia.

final part 2

Question 1

```
#include <iostream>
```

```
#include <iomanip>
```

```
#include <string>
```

```
using namespace std;
```

```
float pizzaPrice = 3.25f;
```

```
float sandwichPrice = 2.10f;
```

```
float sodaPrice = 1.25f;
```

```
float juicePrice = 1.75f;
```

```
float beerPrice = 1.85f;
```

```
int main() {
```

```
    string name;
```

```
    char foodType, drinkType;
```

```
    int foodQty, drinkQty;
```

```
    float foodPrice = 0, drinkPrice = 0, total = 0;
```

```
    cout << "-----MENU-----\n";
```

```
    cout << "Food\n";
```

```
    cout << " Pizza (p).....3.25\n";
```

```
    cout << " Sandwich(s).....2.10\n";
```

```
    cout << "Drinks\n";
```

```
    cout << " Soda(s).....1.25\n";
```

```
    cout << " Juice(J).....1.75\n";
```

```
cout << " Beer(b).....1.85\n";
```

```
cout << "What is your name: ";
```

```
cin >> name;
```

```
cout << "What kind of food in uppercase (P=pizza, S=Sandwich)? ";
```

```
cin >> foodType;
```

```
cout << "How many? ";
```

```
cin >> foodQty;
```

```
cout << "What would you like to drink in uppercase (S=soda, J=Juice, B=Beer)? ";
```

```
cin >> drinkType;
```

```
cout << "How many? ";
```

```
cin >> drinkQty;
```

```
_asm {
```

```
    mov al, foodType
```

```
    cmp al, 'P'
```

```
    je pizza
```

```
    cmp al, 'S'
```

```
    je sandwich
```

```
    pizza :
```

```
    fild foodQty
```

```
        fld dword ptr[pizzaPrice]
```

```
        fmulp st(1), st(0)
```

fstp foodPrice

jmp getDrink

sandwich :

fild foodQty

fld dword ptr[sandwichPrice]

fmulp st(1), st(0)

fstp foodPrice

getDrink :

mov al, drinkType

cmp al, 'S'

je soda

cmp al, 'J'

je juice

cmp al, 'B'

je beer

soda :

fild drinkQty

fld dword ptr[sodaPrice]

fmulp st(1), st(0)

fstp drinkPrice

jmp calcTotal

juice :

```
fild drinkQty
    fld dword ptr[juicePrice]
    fmulp st(1), st(0)
    fstp drinkPrice
    jmp calcTotal
```

beer :

```
fild drinkQty
    fld dword ptr[beerPrice]
    fmulp st(1), st(0)
    fstp drinkPrice
```

calcTotal :

```
fld foodPrice
    fadd dword ptr[drinkPrice]
    fstp total
```

```
}
```

```
total *= 1.10f;
```

```
cout << fixed << setprecision(2);
```

```
cout << name << ", your total bill including 10% tax is $ " << total << endl;
```

```
return 0;
```

```
}
```

```
Microsoft Visual Studio Debu: X + -
-----MENU-----
Food
Pizza (p).....3.25
Sandwich(s).....2.10
Drinks
Soda(s).....1.25
Juice(J).....1.75
Beer(b).....1.85
What is your name: John
What kind of food in uppercase (P=pizza, S=Sandwich)? S
How many? 3
What would you like to drink in uppercase (S=soda, J=Juice, B=Beer)? J
How many? 2
John, your total bill including 10% tax is $ 10.78

C:\Users\derpy\source\repos\Project 7\Debug\Project 7.exe (process 31708) exited with code 0 (0x0).
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 . . .
```

question 2

```
#include <iostream>
```

```
#include <iomanip>
```

```
using namespace std;
```

```
int a[2][4] = { 12,7,10,11,9,6,10,12 };
```

```
void display() {
```

```
    cout << "this array a " << endl;
```

```
    for (int i = 0; i < 2; i++) {
```

```
        for (int j = 0; j < 4; j++) {
```

```
            cout << setw(4) << a[i][j];
```

```
        }
```

```
        cout << endl;
```

```
    }
```

```
}
```

```
int main() {  
    int totalGreen = 0;  
    int totalLarge = 0;  
  
    display();  
    _asm {  
  
        mov ecx, 4;  
        lea esi, a;  
        xor eax, eax;  
  
sumGreen:  
        add eax, [esi];  
        add esi, 4;  
        loop sumGreen  
        mov totalGreen, eax;  
  
        lea esi, a  
        xor eax, eax  
        mov ecx, 2  
        mov ebx, 8  
  
        sumLarge:  
        mov edx, [esi + ebx];  
        add eax, edx
```

```

        add esi, 16;

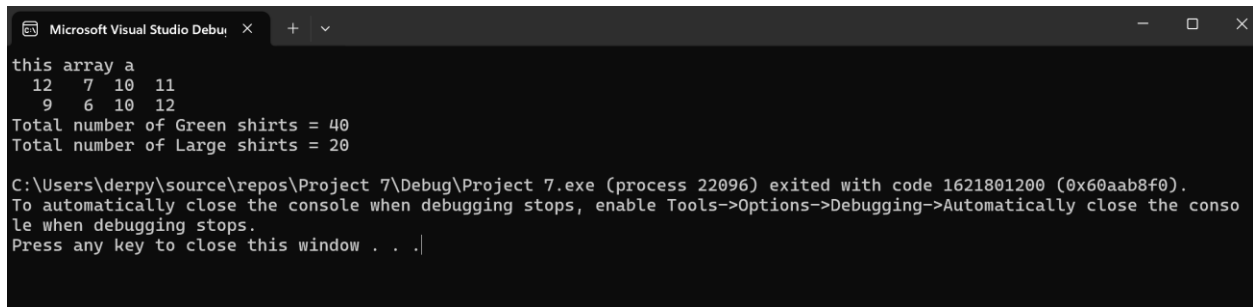
        loop sumLarge;

        mov totalLarge, eax;
    }

    cout << "Total number of Green shirts = " << totalGreen << endl;
    cout << "Total number of Large shirts = " << totalLarge << endl;

}

```



The screenshot shows a Microsoft Visual Studio Debug Console window. The output text is as follows:

```

this array a
12  7 10 11
9   6 10 12
Total number of Green shirts = 40
Total number of Large shirts = 20

C:\Users\derpy\source\repos\Project 7\Debug\Project 7.exe (process 22096) exited with code 1621801200 (0x60aab8f0).
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 . . .

```

Question 3

```

#include <iostream>
#include <iomanip>

using namespace std;

unsigned int eaxVal = 0;

unsigned char john, mimi, kia, bill;

const char* winner;

```



```

void displayVotes() {
    cout << "John " << (int)john << " votes" << endl;
    cout << "Mimi " << (int)mimi << " votes" << endl;
    cout << "Kia " << (int)kia << " votes" << endl;
    cout << "Bill " << (int)bill << " votes" << endl;
    cout << "The winner is " << winner << "." << endl;
}

```

```

int main() {
    const char* nameJ = "John";
    const char* nameM = "Mimi";
    const char* nameK = "Kia";
    const char* nameB = "Bill";

    _asm {
        mov eax, 11001111100010001111111110011011b
        mov ebx, eax
        shr ebx, 24
        mov john, bl

        mov ebx, eax
        shr ebx, 16
        and bl, 0FFh
        mov mimi, bl

        mov ebx, eax

```

```
shr ebx, 8
and bl, 0FFh
mov kia, bl
```

```
mov ebx, eax
and bl, 0FFh
mov bill, bl
```

```
mov al, john
mov esi, nameJ
```

```
mov bl, mimi
cmp bl, al
jbe notM
mov al, bl
mov esi, nameM
notM :
```

```
mov bl, kia
    cmp bl, al
    jbe notK
    mov al, bl
    mov esi, nameK
    notK :
```

```
mov bl, bill
    cmp bl, al
    jbe notB
```

```
    mov al, bl

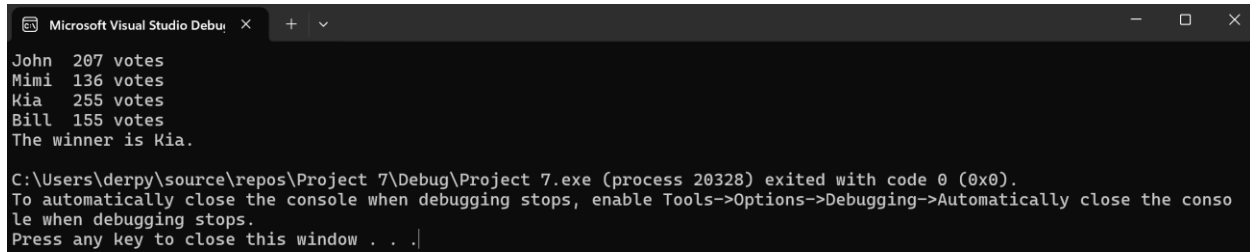
    mov esi, nameB

    notB :

    mov winner, esi
}

displayVotes();

return 0;
}
```



The screenshot shows a Visual Studio Debug Console window with a dark background. The title bar reads 'Microsoft Visual Studio Debug Console'. The output text is as follows:

```
John  207 votes
Mimi  136 votes
Kia   255 votes
Bill  155 votes
The winner is Kia.

C:\Users\derpy\source\repos\Project 7\Debug\Project 7.exe (process 20328) exited with code 0 (0x0).
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 . . .|
```