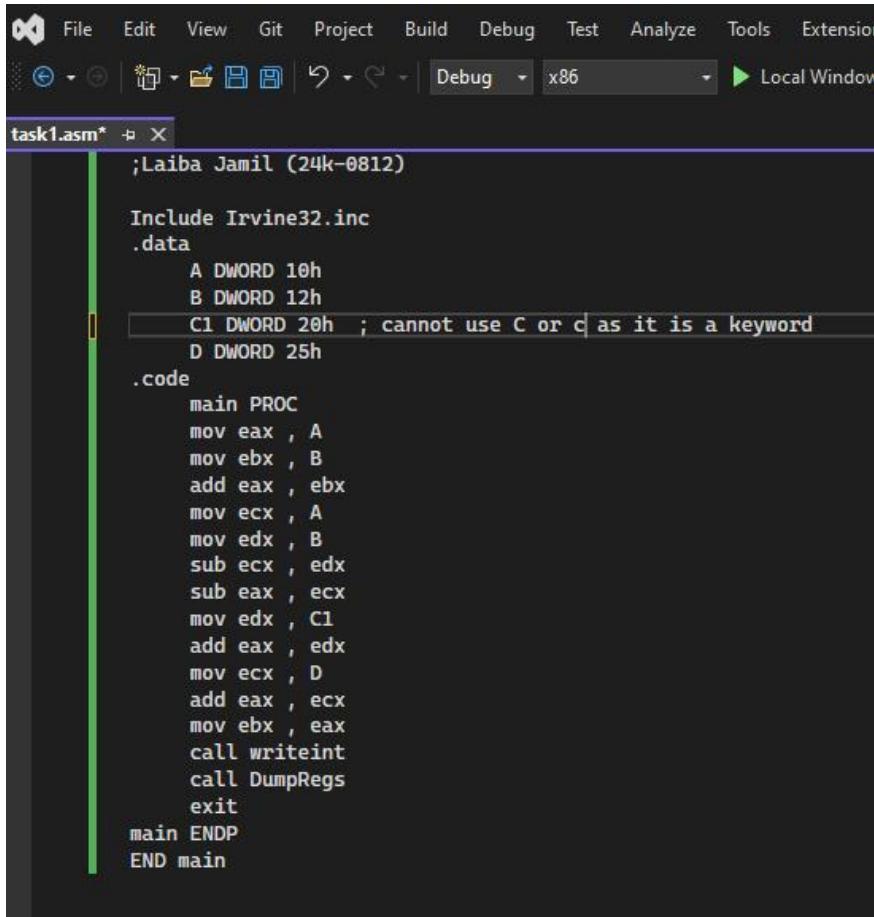


COAL HOME TASK 3A:

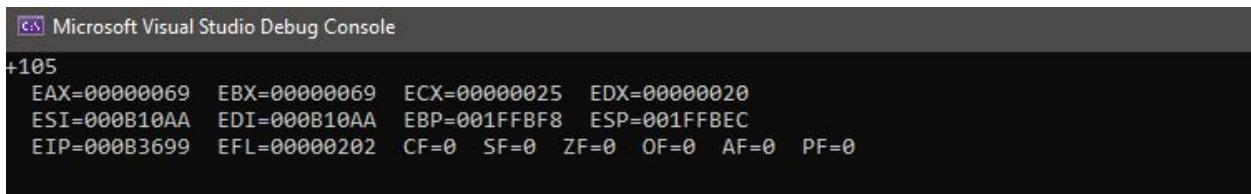
Question 1:



The screenshot shows the Microsoft Visual Studio interface with the assembly code editor open. The file is named 'task1.asm'. The code contains several errors, notably the use of 'C1' as a variable name which is a keyword. The assembly code is as follows:

```
;Laiba Jamil (24k-0812)

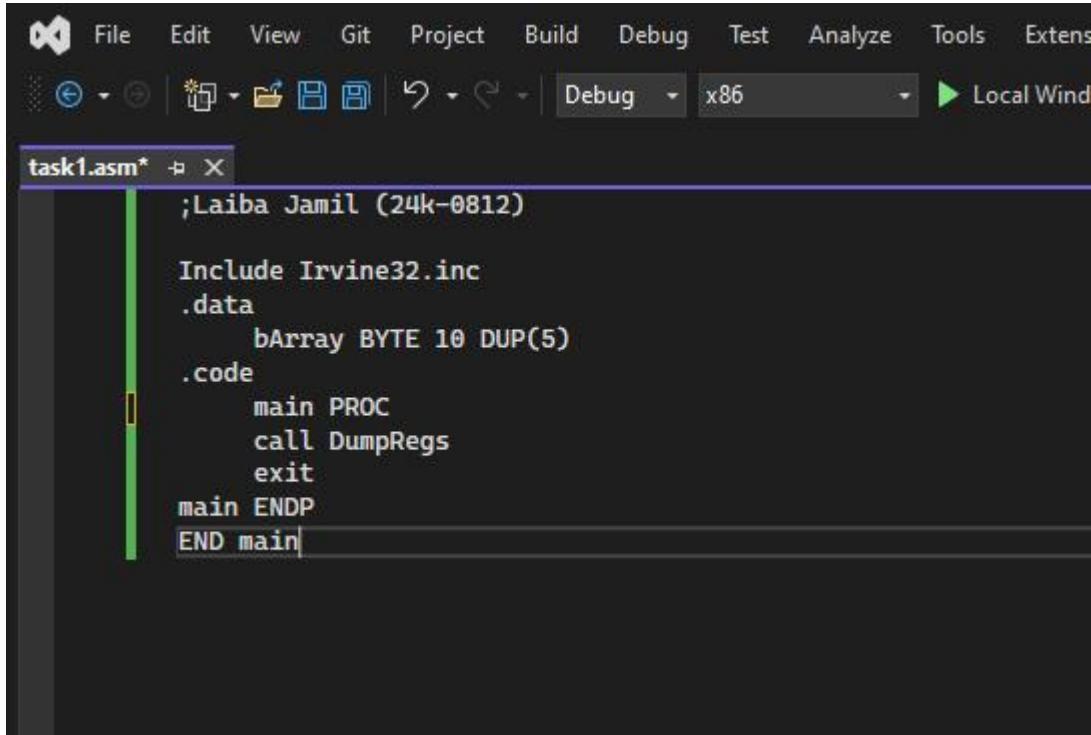
Include Irvine32.inc
.data
    A DWORD 10h
    B DWORD 12h
    C1 DWORD 20h ; cannot use C or c as it is a keyword
    D DWORD 25h
.code
    main PROC
        mov eax , A
        mov ebx , B
        add eax , ebx
        mov ecx , A
        mov edx , B
        sub ecx , edx
        sub eax , ecx
        mov edx , C1
        add eax , edx
        mov ecx , D
        add eax , ecx
        mov ebx , eax
        call writeint
        call DumpRegs
        exit
    main ENDP
END main
```



The screenshot shows the Microsoft Visual Studio Debug Console window. It displays the state of the CPU registers after the program has run. The output is as follows:

```
+105
EAX=00000069  EBX=00000069  ECX=00000025  EDX=00000020
ESI=000B10AA  EDI=000B10AA  EBP=001FFBF8  ESP=001FFBEC
EIP=000B3699  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

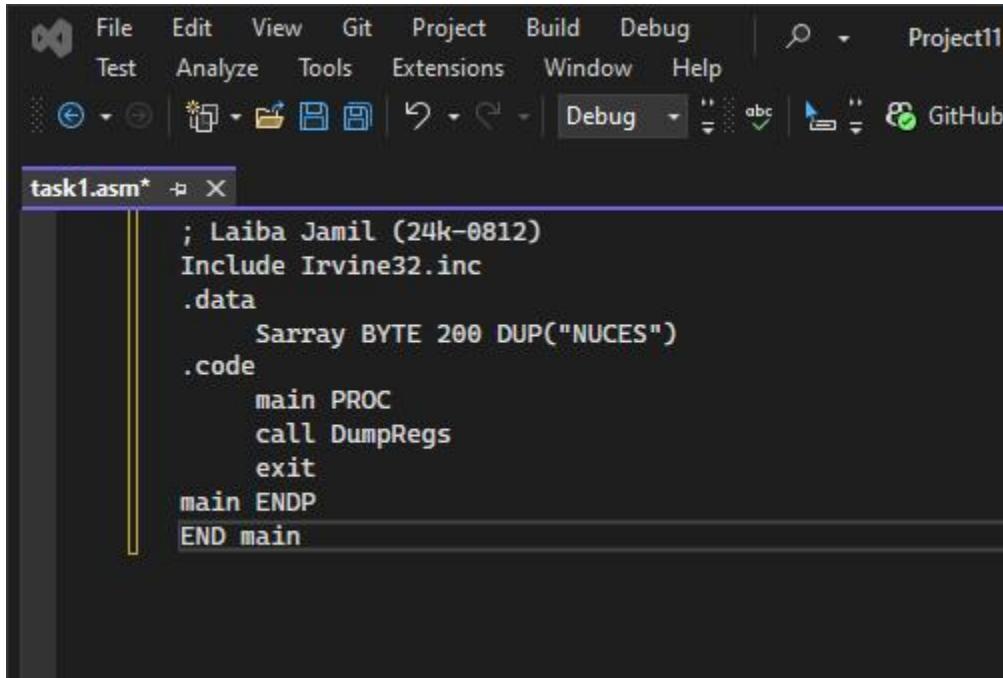
Question 2:



A screenshot of the Microsoft Visual Studio Code interface. The title bar shows "File Edit View Git Project Build Debug Test Analyze Tools Extensions". The status bar indicates "Debug x86 Local Wind". The main editor window displays assembly code for "task1.asm". The code includes a header, an include directive for "Irvine32.inc", a ".data" section defining a byte array "bArray", and a ".code" section containing a "main" procedure that calls "DumpRegs" and exits. The "END main" instruction is currently selected.

```
;Laiba Jamil (24k-0812)
Include Irvine32.inc
.data
    bArray BYTE 10 DUP(5)
.code
    main PROC
        call DumpRegs
        exit
    main ENDP
END main
```

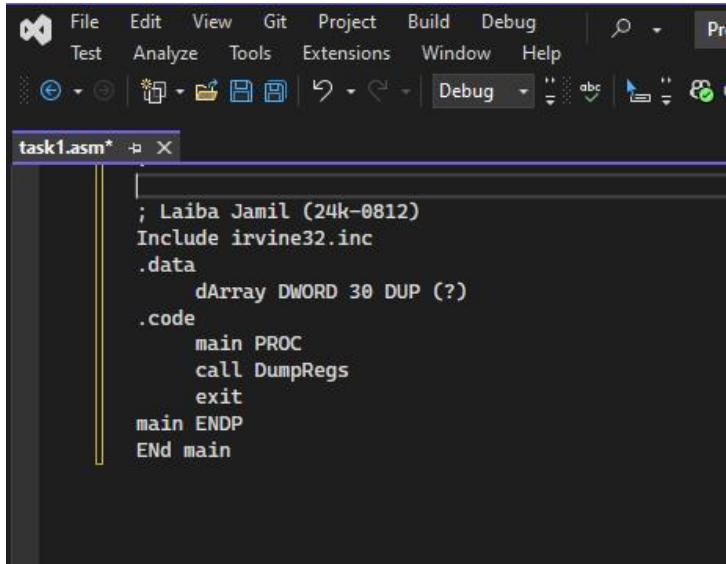
Question 3:



A screenshot of the Microsoft Visual Studio Code interface, showing the same assembly code structure as Question 2, but with a different string in the data section. The string "NUCES" is now defined as "Sarray BYTE 200 DUP("NUCES")". The code still includes a header, an include directive for "Irvine32.inc", a ".data" section defining the string, and a ".code" section containing a "main" procedure that calls "DumpRegs" and exits. The "END main" instruction is currently selected.

```
; Laiba Jamil (24k-0812)
Include Irvine32.inc
.data
    Sarray BYTE 200 DUP("NUCES")
.code
    main PROC
        call DumpRegs
        exit
    main ENDP
END main
```

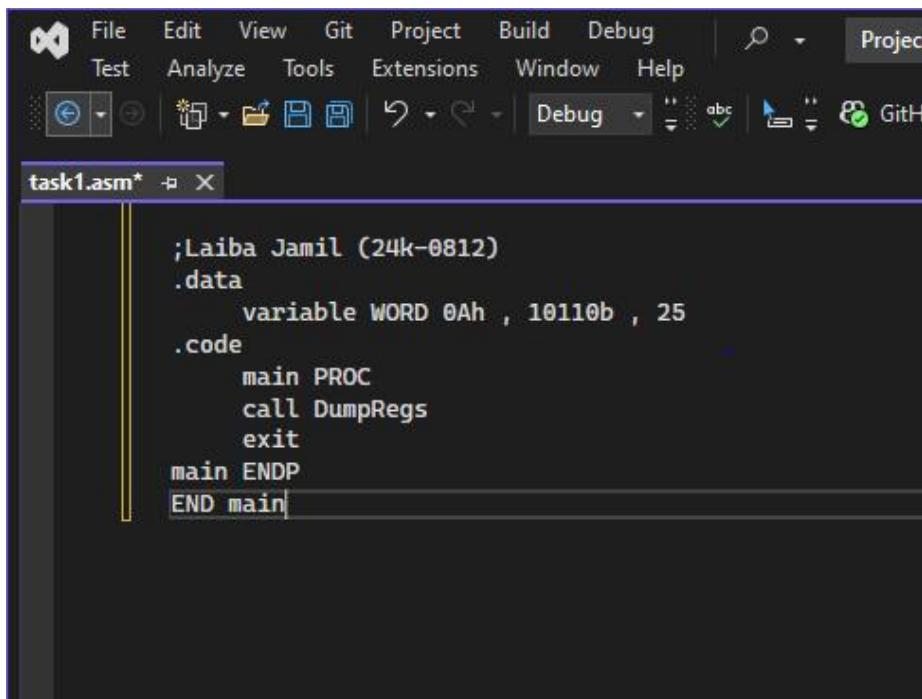
Question 4:



A screenshot of the Microsoft Visual Studio Code interface. The menu bar includes File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, and Help. The toolbar features icons for file operations like Open, Save, Find, and Run. A status bar at the bottom shows "task1.asm*" and "Debug". The main editor window displays the following assembly code:

```
; Laiba Jamil (24k-0812)
Include Irvine32.inc
.data
    dArray DWORD 30 DUP (?)
.code
    main PROC
        call DumpRegs
        exit
    main ENDP
END main
```

Question 5:

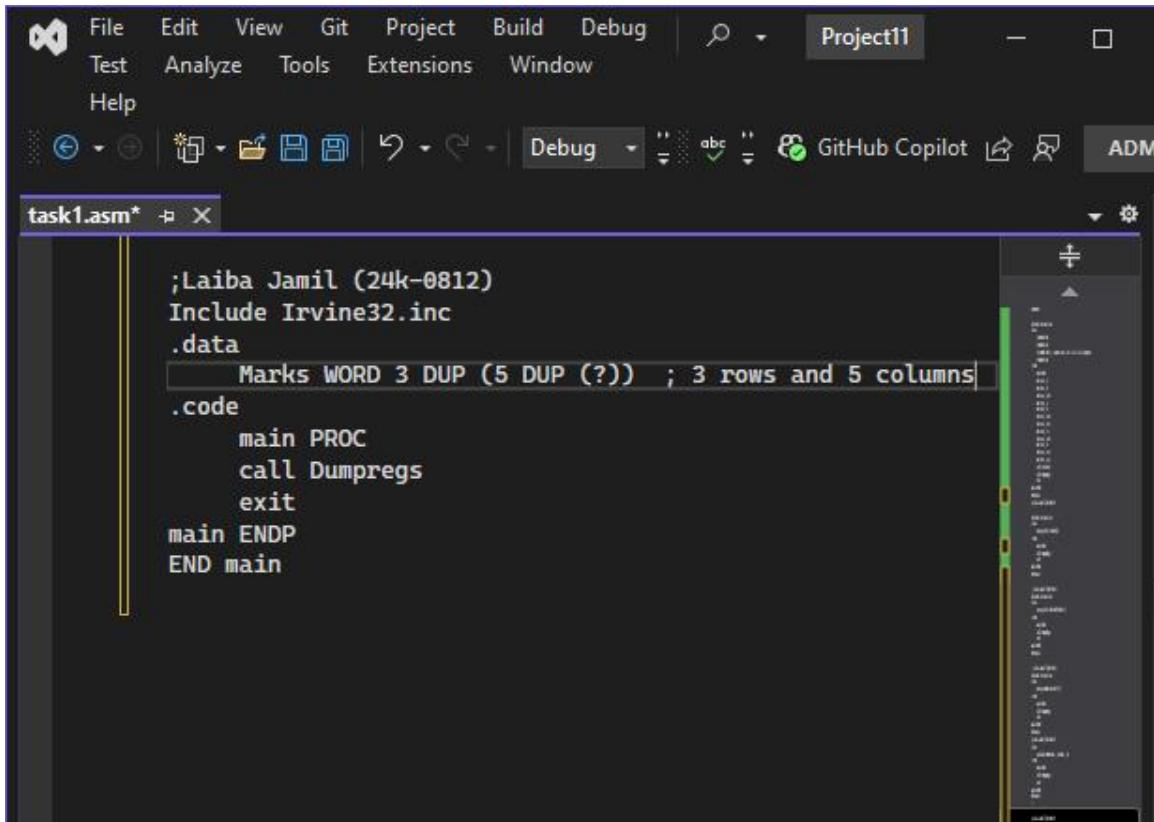


A screenshot of the Microsoft Visual Studio Code interface. The menu bar includes File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and a GitHub icon. The toolbar features icons for file operations like Open, Save, Find, and Run. A status bar at the bottom shows "task1.asm*" and "Debug". The main editor window displays the following assembly code, which contains a syntax error:

```
;Laiba Jamil (24k-0812)
.data
    variable WORD 0Ah , 10110b , 25
.code
    main PROC
        call DumpRegs
        exit
    main ENDP
END main|
```

The word "variable" is misspelled as "variable" in the .data section.

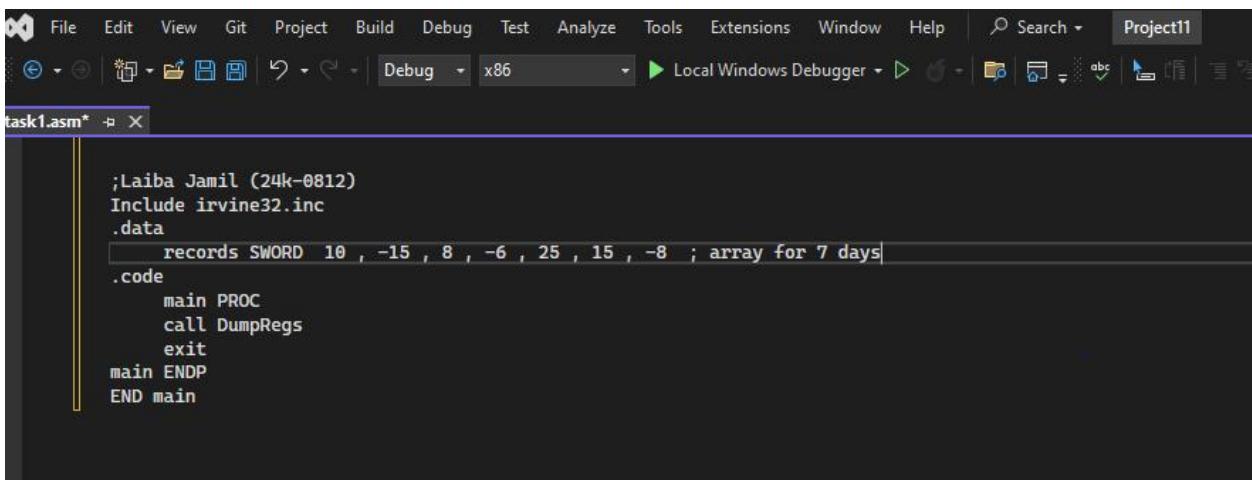
Question 6:



A screenshot of the Microsoft Visual Studio Code interface. The title bar shows "Project11". The menu bar includes File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, and Help. The toolbar includes icons for file operations like Open, Save, Find, and Replace, along with a GitHub Copilot icon. The status bar at the bottom shows "task1.asm*" and "Debug". The main editor window displays the following assembly code:

```
;Laiba Jamil (24k-0812)
Include Irvine32.inc
.data
    Marks WORD 3 DUP (5 DUP (?)) ; 3 rows and 5 columns
.code
    main PROC
        call Dumpregs
        exit
    main ENDP
END main
```

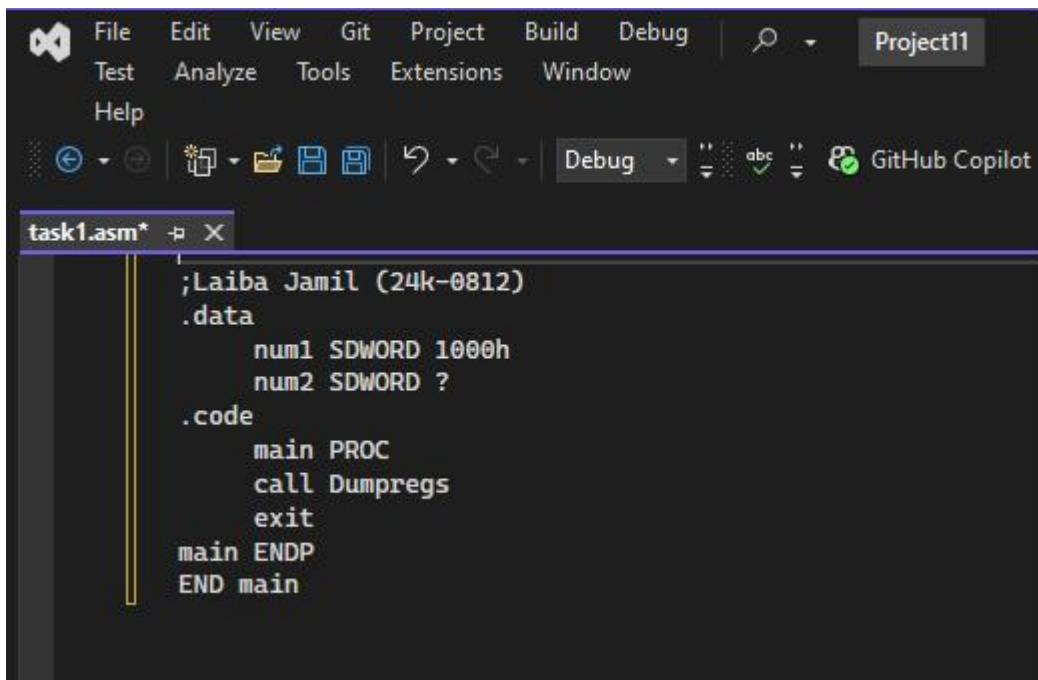
Question 7:



A screenshot of the Microsoft Visual Studio Code interface. The title bar shows "Project11". The menu bar includes File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and a Search icon. The toolbar includes icons for file operations like Open, Save, Find, and Replace, along with a Local Windows Debugger icon. The status bar at the bottom shows "task1.asm*" and "x86". The main editor window displays the following assembly code:

```
;Laiba Jamil (24k-0812)
Include irvine32.inc
.data
    records SWORD 10 , -15 , 8 , -6 , 25 , 15 , -8 ; array for 7 days
.code
    main PROC
        call DumpRegs
        exit
    main ENDP
END main
```

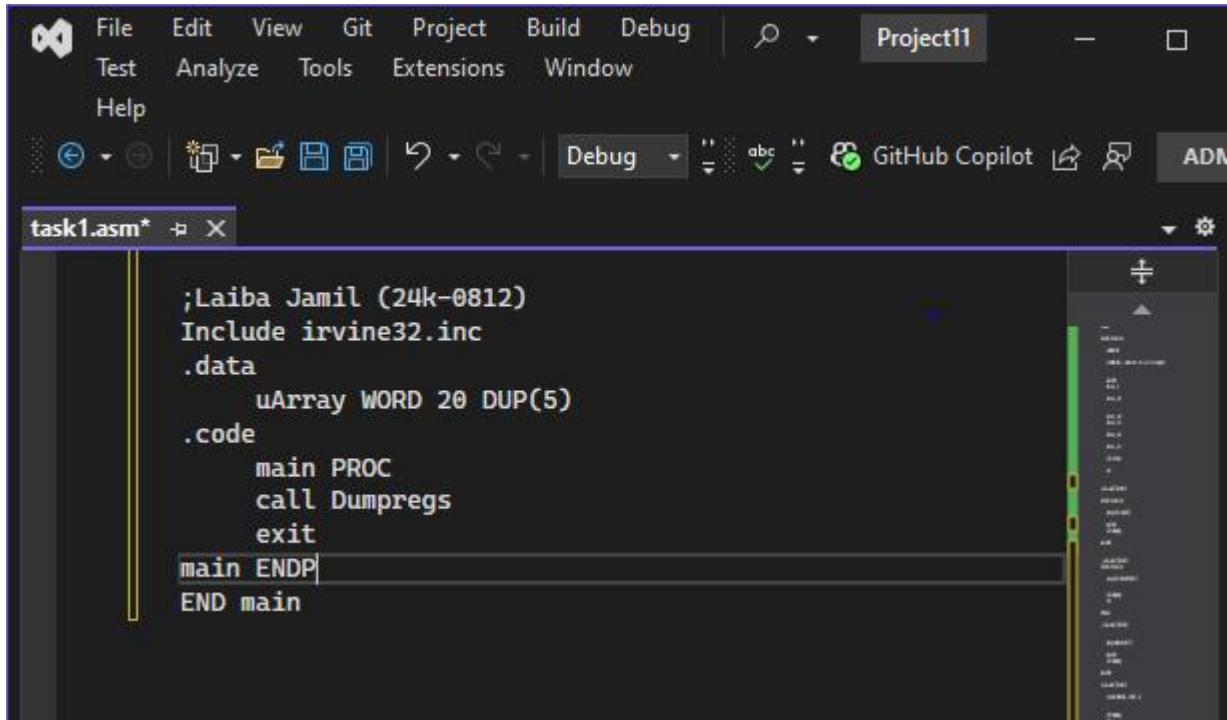
Question 8:



A screenshot of the Microsoft Visual Studio Code interface. The title bar shows "Project11". The menu bar includes File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, and Help. The toolbar contains icons for file operations like Open, Save, Find, and Replace, along with a GitHub Copilot icon. The code editor window displays the assembly code for "task1.asm".

```
;Laiba Jamil (24k-0812)
.data
    num1 SDWORD 1000h
    num2 SDWORD ?
.code
    main PROC
        call Dumpregs
        exit
    main ENDP
END main
```

Question 9:



A screenshot of the Microsoft Visual Studio Code interface, similar to Question 8. The title bar shows "Project11". The menu bar includes File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, and Help. The toolbar contains icons for file operations like Open, Save, Find, and Replace, along with a GitHub Copilot icon. The code editor window displays the assembly code for "task1.asm", which includes an include directive for "irvine32.inc". A vertical sidebar on the right shows the assembly dump.

```
;Laiba Jamil (24k-0812)
Include Irvine32.inc
.data
    uArray WORD 20 DUP(5)
.code
    main PROC
        call Dumpregs
        exit
    main ENDP
END main
```

Question 10:

```
;Laiba Jamil (24-0812)
Include Irvine32.inc
.data
    msg BYTE ?
    var BYTE "COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE",0
.code
    main PROC
        call Dumpregs
        exit
    main ENDP
END main
```