Assembly Language

Question #1

What is the application of Assembly language. Also Project description built in Assembly language:

Answer #1:

ASSEMBLY LANGUAGE:

Assembly language abbreviated as .ASM is a low-level computer language where the commands are more closed to machine-level language and equally understandable to humans also.

COMMANDS:

- MOV
- ADD
- CALL
- PUSH
- POP
- NOT
- JMP
- SUB

These Mnemonics helps us to perform our desired task.

OR

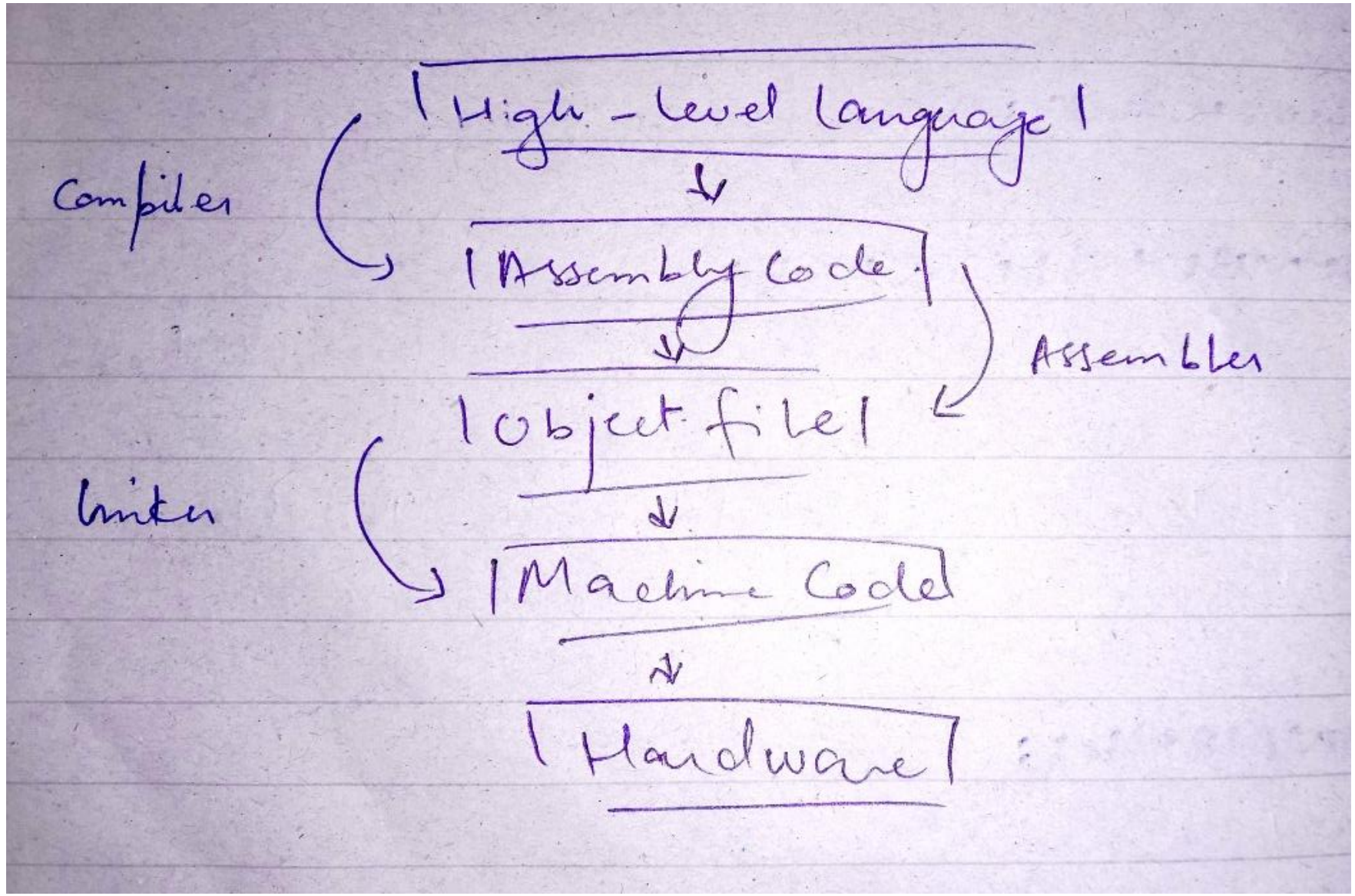
Assembly language is the lowest, most primitive level of programming.

While assembly language can be very fast in the small and can take advantage of processors feature inaccessible through the compiler, compilers do a better job

Overall and high-level code is far easier to debug and maintain.

APPLICATIONS:

- Assembly results in a faster and smaller codes.
- It protects software execution against different types of attacks.
- It is used for direct hardware manipulation.
- You have an access to specialized process or instructions.
- Handy in addressing critical performance issue.
- Typically used in lower-level embedded systems, device drivers and real-time systems.


High - level language
Compiler
Assembly Code
Assembler
object file
Linker
Machine Code
Hardware

PROJECT:

MOUSE PROTOCOL DRIVER:

Assembly Language helps in developing the hardware program that help us to manipulate our desired content.

EXAMPLE: Clicking of Mouse

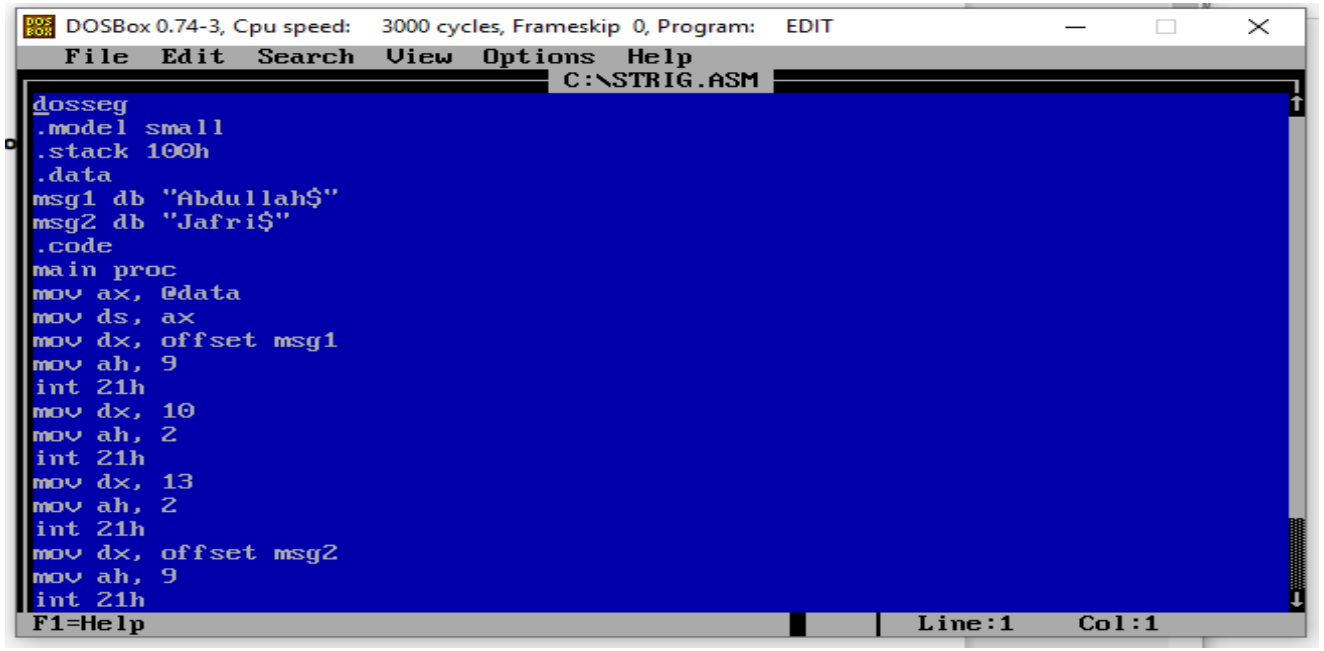
Assembly-made driver helps us to create movement, to click and to get access to any document by simply just clicking by the help of mouse. That driver connects that certain document with the mouse.

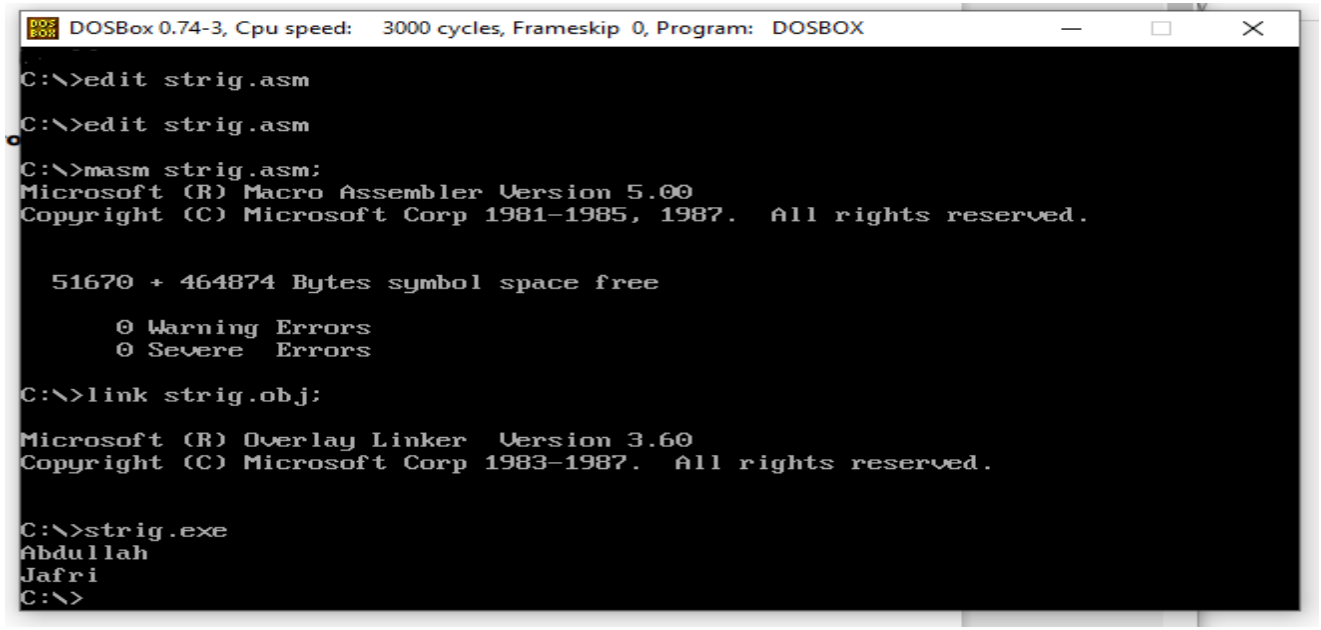
Question #2.

Program to Print Two Strings on Two Different Lines:

Answer #2:

```
dosseg
.model small
.stack 100h
.data
msg1 db "Abdullah$"
msg2 db "Jafri$"
.code
main proc
mov ax, @data
mov ds, ax
mov dx, offset msg1
mov ah, 9
int 21h
mov dx, 10
mov ah, 2
int 21h
mov dx, 13
mov ah, 2
int 21h
mov dx, offset msg2
mov ah, 9
int 21h
mov ah, 4ch
int 21h
main endp
end main
```



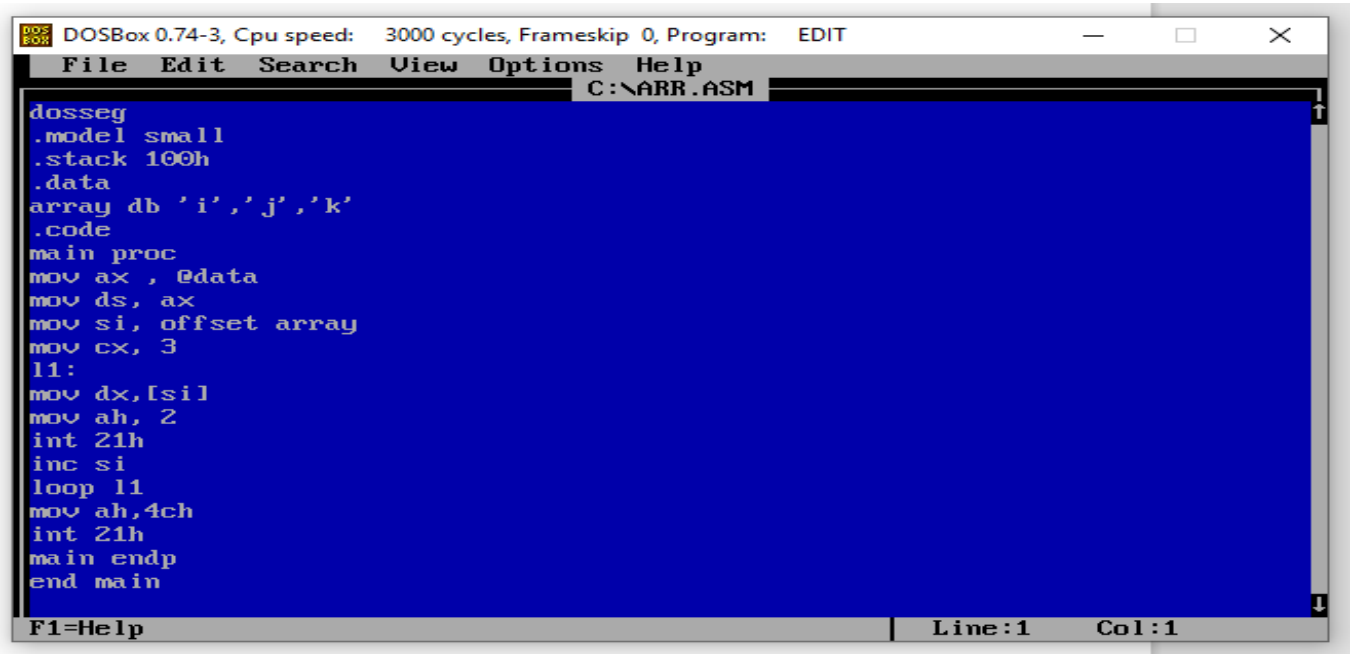


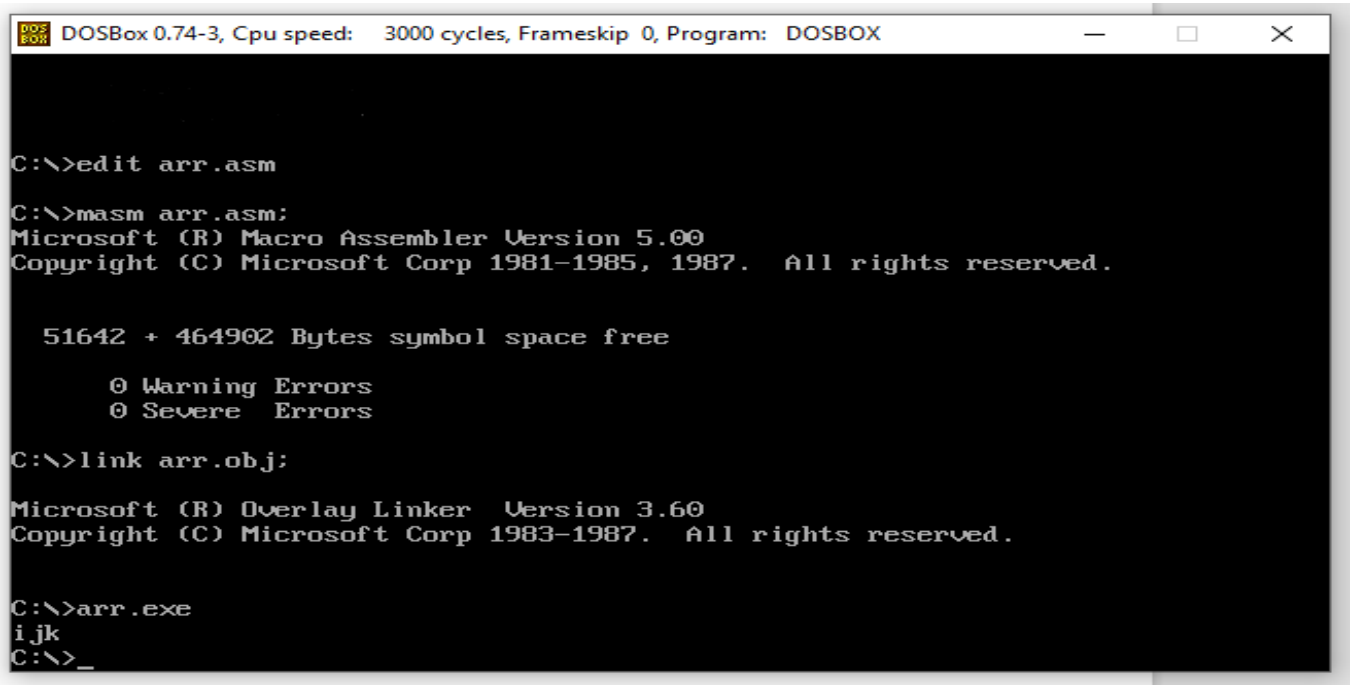
Question #3.

Program to print an Array using Loop:

Answer #3:

```
dosseg
.model small
.stack 100h
.data
array db 'i','j','k'
.code
main proc
mov ax , @data
mov ds, ax
mov si, offset array
mov cx, 3
l1:
mov dx,[si]
mov ah, 2
int 21h
inc si
loop l1
mov ah,4ch
int 21h
main endp
end main
```



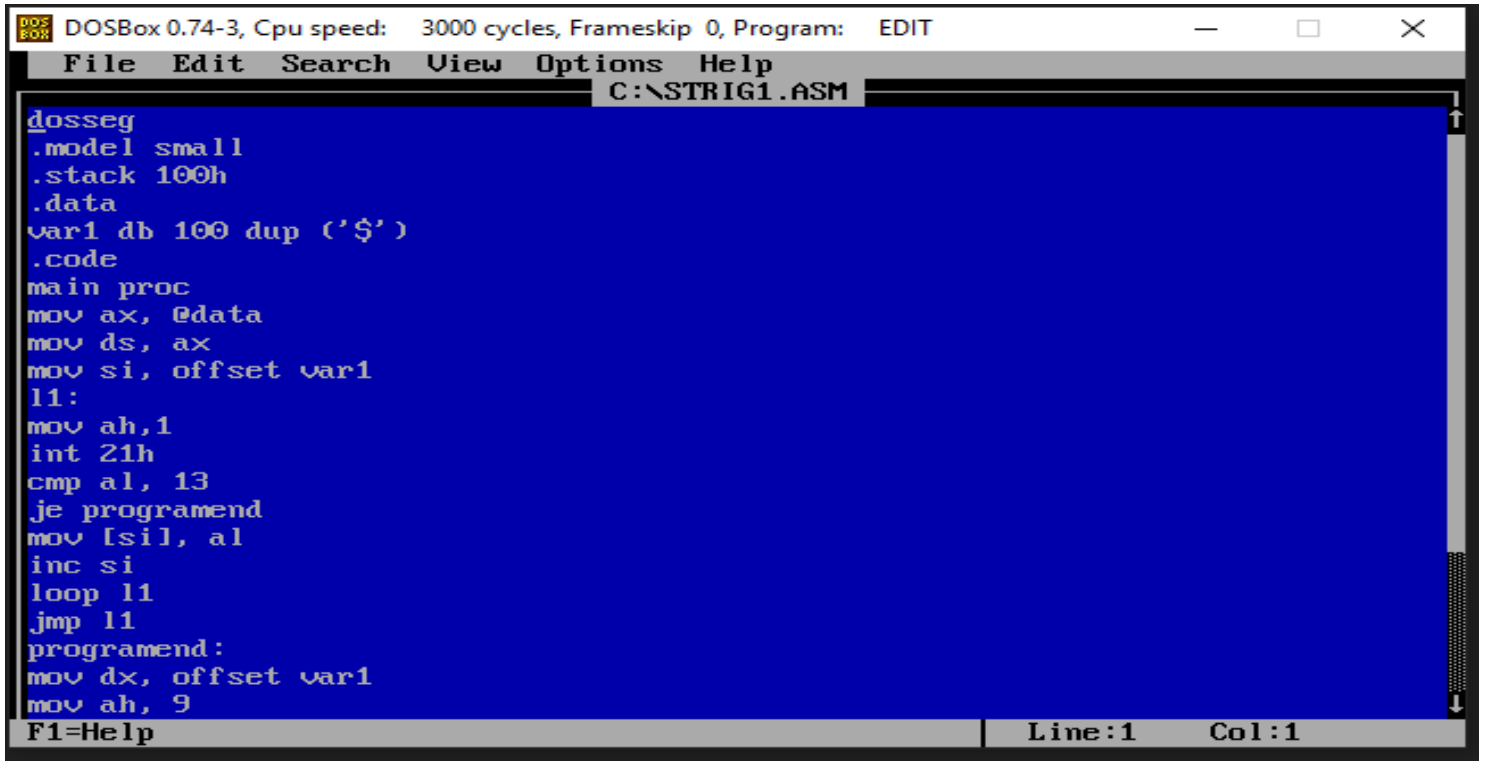


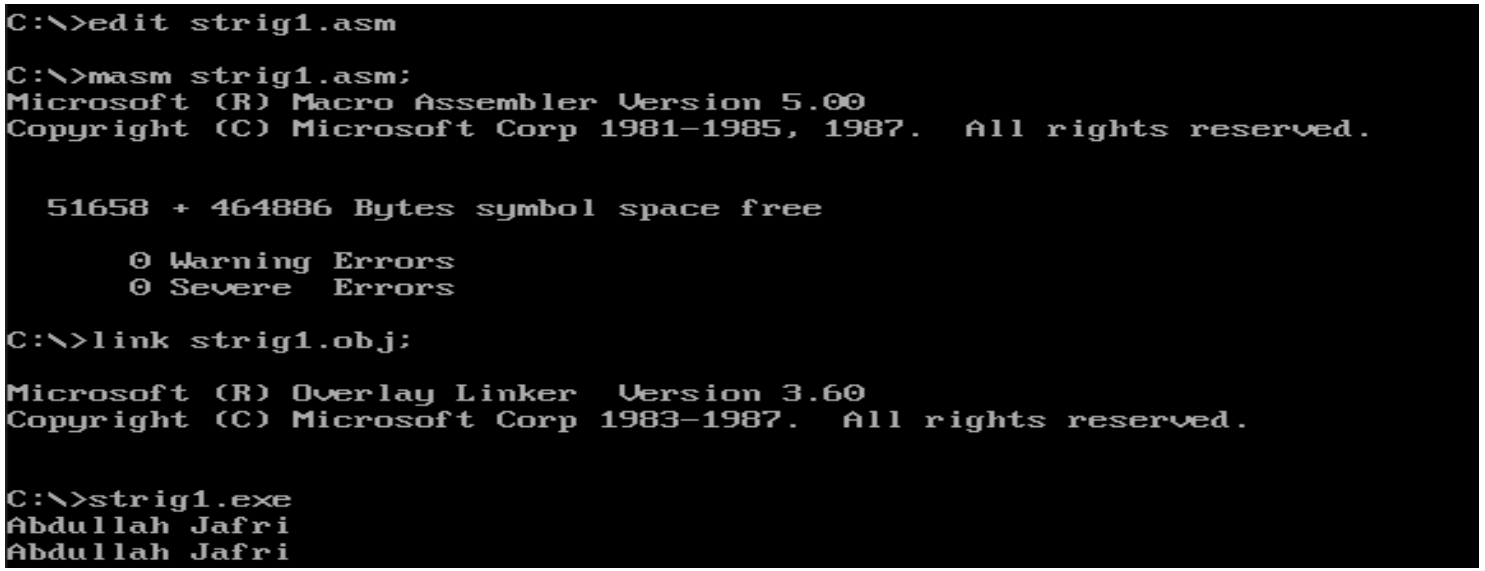
Question #4.

Program to input string and print it:

Answer #4:

```
dosseg
.model small
.stack 100h
.data
var1 db 100 dup ('$')
.code
main proc
mov ax, @data
mov ds, ax
mov si, offset var1
l1:
mov ah,1
int 21h
cmp al, 13
je programend
mov [si], al
inc si
loop l1
jmp l1
programend:
mov dx, offset var1
mov ah, 9
int 21h
mov ah, 4ch
int 21h
main endp
end main
```





Question #5.

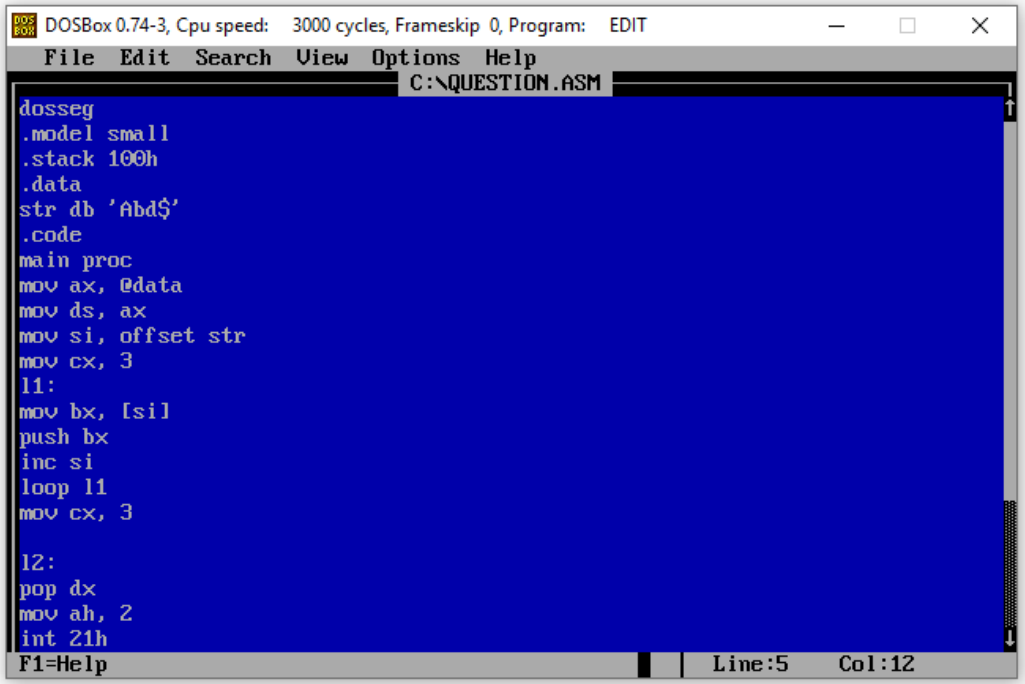
Program to reverse a string:

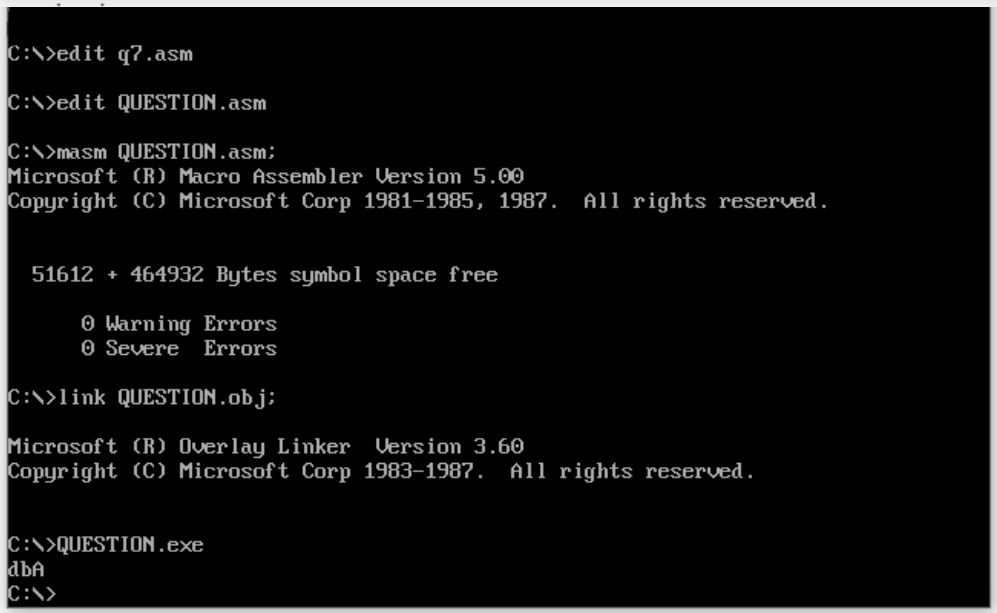
Answer #5:

```
dosseg
.model small
.stack 100h
.data
str db 'Abd'
.code
main proc
mov ax, @data
mov ds, ax
mov si, offset str
mov cx, 3
l1:
mov bx, [si]
push bx
inc si
loop l1
mov cx, 3
l2:
pop dx
mov ah, 2
int 21h
loop l2
mov ah, 4ch
int 21h
main endp
end main
```

#To Print a big string increase number of loops.

Question #5. Program to REVERSE a String:





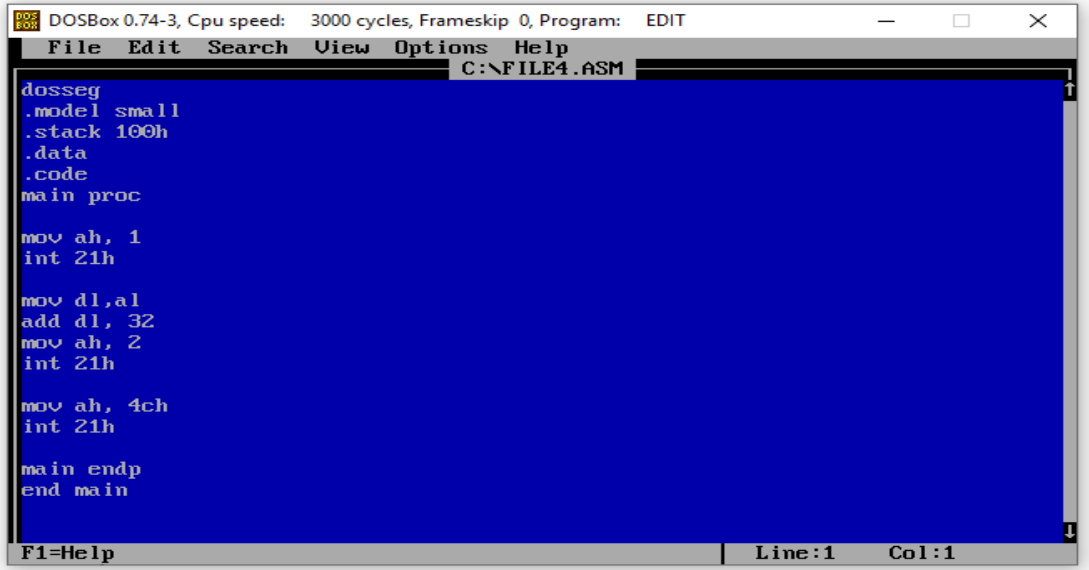
Question #6.

Program to input a capital letter from user and convert it into small letter.

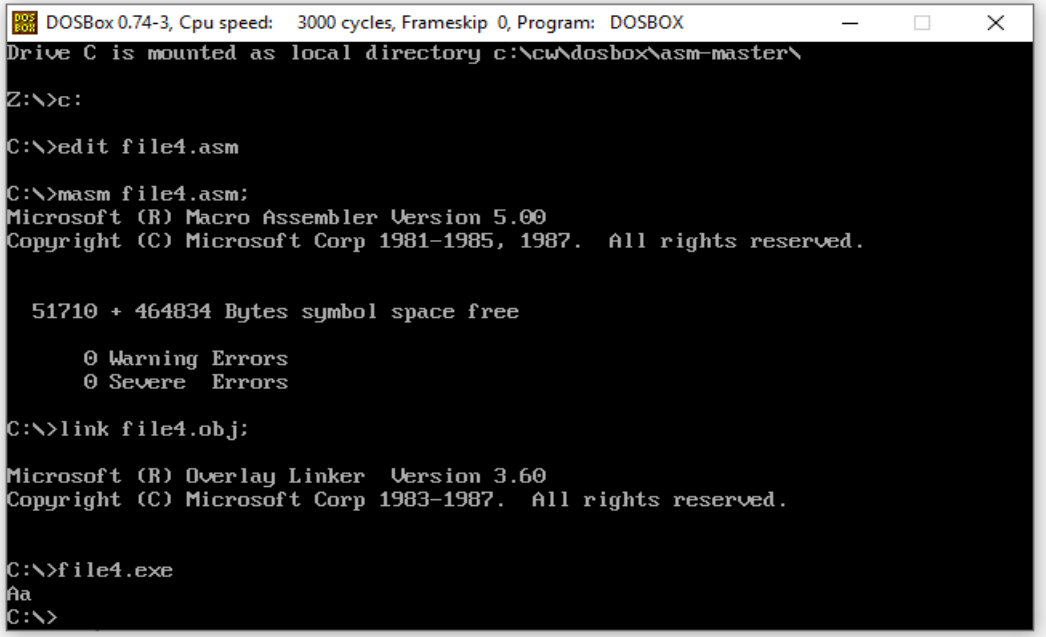
Answer #6:

```
dosseg
.model small
.stack 100h
.data
.code
main proc

mov ah, 1
int 21h

mov dl,al
add dl, 32
mov ah, 2
int 21h

mov ah, 4ch
int 21h

main endp
end main
```

Question #6. Program to input a capital letter from user and convert it into small letter (uppercase to lowercase):



Question #6. Program to input a capital letter from user and convert it into small letter (uppercase to lowercase):



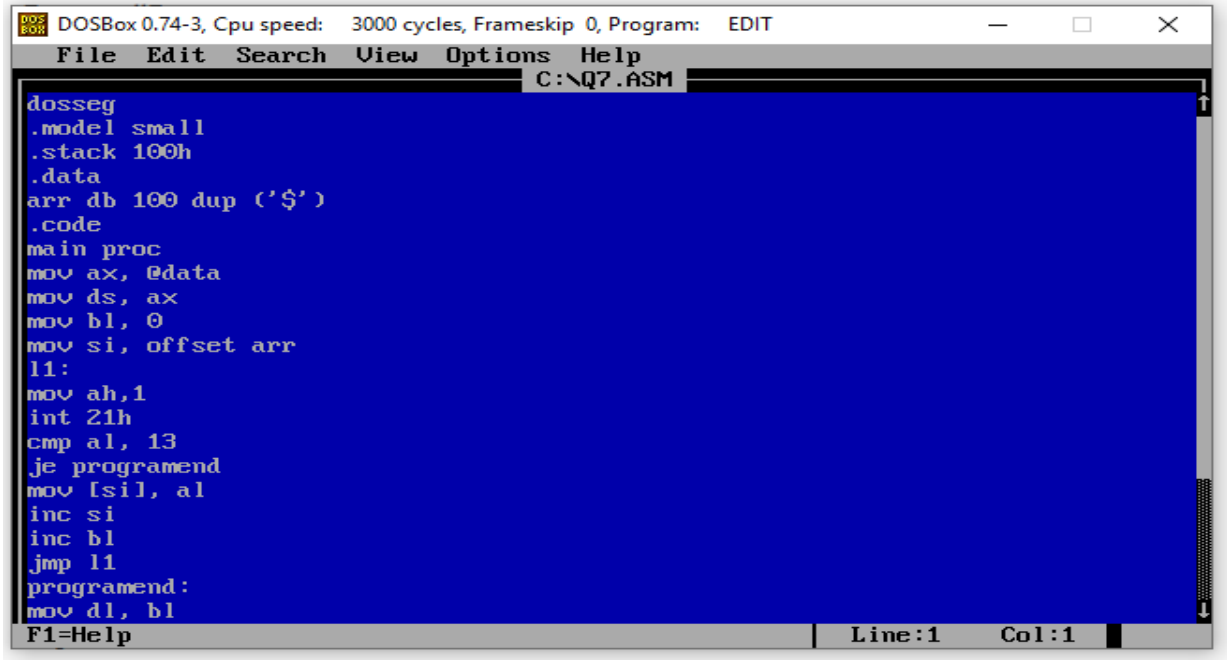
Question #7.

Program to input String from user and print its length:

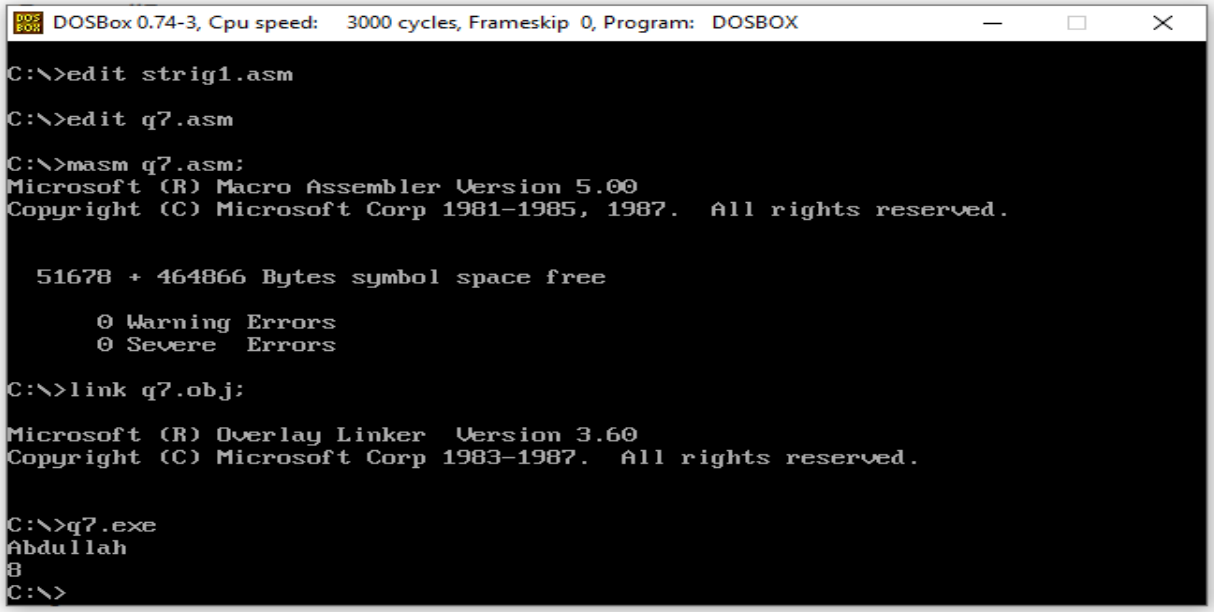
Answer #7:

```
dosseg
.model small
.stack 100h
.data
arr db 100 dup ('$')
.code
main proc
mov ax, @data
mov ds, ax
mov bl, 0
mov si, offset arr
l1:
mov ah,1
int 21h
cmp al, 13
je programend
mov [si], al
inc si
inc bl
jmp l1
programend:
mov dl, bl
mov ah, 2
add dl, 48
int 21h
mov ah, 4ch
int 21h
main endp
end main
```

Question#7. Program to input String from user and print its length:



Question#7. Program to input String from user and print its length:



THE END!