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Experiment No	6

Aim	Write a program to implement basic authentication system.
Problem Statement	Create a basic user authentication system in assembly language using input/output and string comparison with DOS interrupts.

Program 1
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Program	<pre> DATA SEGMENT     u1 db "Sujal","\$"     u2 db "sujal@1234","\$"     valid db "valid","\$"     invalid_username db "Invalid username!","\$"     invalid_password db "Invalid password!","\$"     prompt1 db "Enter username: \$"     prompt2 db "Enter password: \$" DATA ENDS  EXTRA SEGMENT     user_u4 db 10 DUP(0)     user_u5 db 10 DUP(0) EXTRA ENDS  ASSUME CS:CODE, DS:DATA, ES:EXTRA  CODE SEGMENT START:     ; Initialize DS and ES     MOV AX, DATA     MOV DS, AX     MOV AX, EXTRA     MOV ES, AX      ; Take input for u4     lea dx, prompt1     MOV AH, 09H     INT 21H      lea di, user_u4     MOV CX, 0AH </pre>
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	<pre> read_u4:     MOV AH, 01H     INT 21H     CMP AL, 0DH     JE append_u4_end     MOV ES:[DI], AL     INC DI     LOOP read_u4  append_u4_end:     MOV BYTE PTR ES:[DI], '\$'  ; Take input for u5     lea dx, prompt2     MOV AH, 09H     INT 21H      lea di, user_u5     MOV CX, 0AH  read_u5:     MOV AH, 07H     INT 21H     CMP AL, 0DH     JE append_u5_end     MOV ES:[DI], AL     INC DI     LOOP read_u5  append_u5_end:     MOV BYTE PTR ES:[DI], '\$'  ; Compare u1 with user input u4 (Username comparison)     lea si, u1     lea di, user_u4     MOV CX, 06H     cld     repe cmpsb     jnz invalid_user  ; Compare u2 with user input u5 (Password comparison)     lea si, u2     lea di, user_u5     MOV CX, 04H     cld     repe cmpsb     jnz invalid_pass  ; If both comparisons are equal, print "valid"     lea dx, valid </pre>
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	<pre> MOV AH, 09H INT 21H jmp terminate  invalid_user: ; If username comparison fails, print "Invalid username" lea dx, invalid_username MOV AH, 09H INT 21H jmp terminate  invalid_pass: ; If password comparison fails, print "Invalid password" lea dx, invalid_password MOV AH, 09H INT 21H  terminate: MOV AH, 4CH INT 21H  CODE ENDS END START </pre>
Result:	<p>Result with Incorrect Username :</p> <pre> C:\&gt;debug userpass.exe ~d 076A:0000 076A:0000  73 75 6A 61 6C 24 73 75-6A 61 6C 40 31 32 33 34  su.jal\$su.jal@1234 076A:0010  24 76 61 6C 69 64 24 49-6E 76 61 6C 69 64 20 75  \$valid\$Invalid u 076A:0020  73 65 72 6E 61 6D 65 21-24 49 6E 76 61 6C 69 64  sername!\$Invalid 076A:0030  20 70 61 73 73 77 6F 72-64 21 24 45 6E 74 65 72  password!\$Enter 076A:0040  20 75 73 65 72 6E 61 6D-65 3A 20 24 45 6E 74 65  username: \$Ente 076A:0050  72 20 70 61 73 73 77 6F-72 64 3A 20 24 00 00 00  r password: \$... 076A:0060  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00  ..... 076A:0070  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00  ..... ~g Enter username: su.ja Enter password: Invalid username! Program terminated normally </pre>

	<p>Result with Incorrect Password :</p> <pre> C:\&gt;debug userpass.exe -d 076A:0000 076A:0000 73 75 6A 61 6C 24 73 75-6A 61 6C 40 31 32 33 34 sujal\$ sujal@1234 076A:0010 24 76 61 6C 69 64 24 49-6E 76 61 6C 69 64 20 75 \$valid\$Invalid u 076A:0020 73 65 72 6E 61 6D 65 21-24 49 6E 76 61 6C 69 64 sername!\$Invalid 076A:0030 20 70 61 73 73 77 6F 72-64 21 24 45 6E 74 65 72 password!\$Enter 076A:0040 20 75 73 65 72 6E 61 6D-65 3A 20 24 45 6E 74 65 username: \$Ente 076A:0050 72 20 70 61 73 73 77 6F-72 64 3A 20 24 00 00 00 r password: \$... 076A:0060 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 ..... 076A:0070 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 ..... -g Enter username: sujal Enter password: Invalid password! Program terminated normally - </pre> <p>Result with correct Username and Password :</p> <pre> C:\&gt;debug userpass.exe -d 076A:0000 076A:0000 73 75 6A 61 6C 24 73 75-6A 61 6C 40 31 32 33 34 sujal\$ sujal@1234 076A:0010 24 76 61 6C 69 64 24 49-6E 76 61 6C 69 64 20 75 \$valid\$Invalid u 076A:0020 73 65 72 6E 61 6D 65 21-24 49 6E 76 61 6C 69 64 sername!\$Invalid 076A:0030 20 70 61 73 73 77 6F 72-64 21 24 45 6E 74 65 72 password!\$Enter 076A:0040 20 75 73 65 72 6E 61 6D-65 3A 20 24 45 6E 74 65 username: \$Ente 076A:0050 72 20 70 61 73 73 77 6F-72 64 3A 20 24 00 00 00 r password: \$... 076A:0060 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 ..... 076A:0070 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 ..... -g Enter username: sujal Enter password: valid Program terminated normally - </pre>
Conclusion:	Through this experiment, I have learnt to create simple authentication system using assembly language.