

Bonus Question #1 (5 points)

Write a small program that does the following:

Check bits 13 and 12 of a variable Var1 (located in memory).

If (bits[13:12] == 11b) then set these two bits to 00b.

else set these two bits to 11b.

Bonus Question #2 (50 points)

A communication medium uses the HDLC bit protocol. This protocol works as follows:

- Data is contained in packets
 - Start Of Packet and End Of Packet use the same character 7Eh = 0111_1110b.
Whenever a 7Eh is received it means:
 - Start Of Packet if there is no packet being received. This character is called the **opening flag**.
 - End Of Packet if a packet is being received (an opening flag has already been received). This character is called a **closing flag**.
 - In order not to confuse any character which code happens to be just the same as the closing flag (7Eh) with an actual closing flag; any character which value is 7Eh is replaced by the sequence 7Dh, 5Eh. The character 7Dh is inserted before the 7Eh and the character 7Eh is Xored with the value 20h which results in the value 5Eh. The character 7Dh is called the **escape flag**.
 - Similarly, after introducing the escape flag, any character which value is equal to the escape flag may be confused with an actual escape flag. In order to remove the confusion, any 7Dh present in the data will be escaped with another 7Dh so that it becomes a sequence of two characters 7Dh, 5Dh. The second character is obtained by Xoring the original 7Dh with the value 20h.
 - When no opening flag has been received, any received characters are ignored and are not saved.
1. Write a procedure that sends a packet of data contained in an array in memory. The input of the procedure should be the address of the packet (in memory) and the number of characters (bytes). Sending the bytes is done with a special system call to the function (suppose that it exists) **SendHDLCByte** which send the byte contained in register AL.
 2. Write a procedure that receives a packet from the HDLC channel and saves it in an array in memory. The input of the procedure should be the address of the area receiving the packet (in memory). The procedure should return the actual number of bytes the received packet has in EBX. Receiving the bytes is done with a special system call to the function (suppose that it exists) **GetHDLCByte** which gets the next byte from the HDLC channel and returns it contained in register AL.