Computer Systems Engineering I
Tip to HW Lab 2

Assignment 1:

Connect the keypad according to the wiring diagram and write a function that initializes the pins. Use brake points, a LED and the debugger to check if it works.

Assignment 2:

Write a function that returns an integer value witch key is pressed. The function can look like this:

```
int func(void){
Value = 0
Clear OE KEY BUS (Active Low)
Make all Column pin as output
Set all Column pin as high
Loop Column
        Clear one column at the time
        Loop Row
                Read row and check if bit is zero
                        Value = Row*3+Col+1;
        end loop Row
        Set the column again
End loop Column
Make all Column pin as input
Return Value.
```

Assignment 3:

Connect the display according to the wiring diagram and write a function that initializes the pins and the display. Use brake points, a LED and the debugger to check if it works. Here are some function that can be used:

```
void Delay(int Value){
        int i;

        for(i=0;i<Value;i++)
                asm("nop");
}
```

unsigned char Read_Status_Display(void)

unsigned char Temp;

make databus as input
Set dir as input (74chip, 1 = input)
Clear/enable output (74chip 0 = enable)
Set C/D
Clear chip select display
Clear read display
Make a Delay
Read data bus and save it in temp
Set chip select display
Set read display
Disable output (74chip)
Set dir as output (74chip)
Return (Temp)

Write_Command_2_Display(unsigned char Command)

Wait until Read_Status_Display returns an OK
Clear databus
Set Command to databus
Set dir as output (74chip)
Enable output (74chip)
Set databus as output
Set C/D signal High (1 = Command)
Clear chip select display
Clear write display
Make a Delay
Set chip enable display
Set write display
Disable output (74chip)
Make databus as input

Write_Data_2_Display(unsigned char Data)

Wait until Read_Status_Display returns an OK
Clear databus
Set Data to databus
Set dir as output (74chip)
Enable output (74chip)
Set databus as output
Clear C/D signal High (0 = Data)
Clear chip select display
Clear write display
Make a Delay
Set chip enable display
Set write display
Disable output (74chip)
Make databus as input

Init_Display(void)

Clear Reset display
Make a Delay
Set Reset display

```
Write_Data_2_Display(0x00);
Write_Data_2_Display(0x00);
Write_Command_2_Display(0x40);//Set text home address
Write_Data_2_Display(0x00);
Write_Data_2_Display(0x40);
Write_Command_2_Display(0x42); //Set graphic home address
Write_Data_2_Display(0x1e);
Write_Data_2_Display(0x00);
Write_Command_2_Display(0x41); // Set text area
Write_Data_2_Display(0x1e);
Write_Data_2_Display(0x00);
Write_Command_2_Display(0x43); // Set graphic area
Write_Command_2_Display(0x80); // text mode
Write_Command_2_Display(0x94); // Text on graphic off
```

Assignment 4:

Write a function that prints the number from keypad to the display. Check by looking