

**CENG318 - Microprocessors****Final Exam**

This is a hybrid C/C++ program. So I imported both C and C++ libraries. My first function which is for cleaning screen is a basic function. I used union REGS structure for the whole code. This structure for registers, this project converted from my midterm project which its language is Asembly. Because of that reason I used REGS. Also, for interrupts I used int86() function with various variables like 0x10, 0x21. Setscreen function is used for graphics screen mode option 12h. Cursor function is used for mouse's position. After this function, it comes to the column drawing process. It's a little bit confusing. Drawcolumn and drawrow functions take four parameters. The reason is mistakes in my midterm project. Grid can be very big, so I can't choose gaps in a constant value. I have to change that gaps' length in dynamically way. For that I have a3 and a4 variables. They keep length between two lines. One of them for gaps between vertical lines and the other one for gaps between horizontal lines. A5 and a6 are backup variables for a3 and a4. Because a3 and a4 shouldn't forget their values and they should not use directly in the operations. Inside do..while loop is making some operations such as drawing and coloring. Outside do..while loop is making calculations. Because the value which is stored in a6 and a5 should be expanded according to the entered values should be protected in a3 and a4. Drawrow function works as same the drawcolumn function with a difference one of them is working with a3 and a5, the other one is working with a4 and a6. A7 is a strict for backups. Takeinput function is made for calculating gaps. In my previous project, this section is failed. I have v and h variables. Those are used for resolution, vertical axis is v and it is equal 480. Horizontal axis is h and it is equal 640. When large numbers are entered for drawing grid, there may be a screen shift. Because the logic of the function is division. And all values can't be divided as an integer. When it comes to small numbers pixels which lost at division part are not recognized. But it is about large numbers, lost pixels are recognized.