At first. There are 2 assembly files in this homework zip. Because I cannot handle some parts for writing output to file. Differences and similarities are explained in this report.

Pseudo Code in C (explanations are after the C code)

```
#include <stdio.h>

int main()

{

	int num=0,arr[20],arrsize=0;

	char ch = 'a';

	FILE *fp,*op;

	fp = fopen("input.txt","r");

	op = fopen("output.txt","w");

	fscanf(fp,"%c",&ch);

	while(!feof(fp)){

		fscanf(fp,"%d %c",&num,&ch);

		arr[arrsize]=num;

		arrsize++;

	}

	arrsize = arrsize-2;

	int a=0,b=0,c=0,max,size,maxsize=0,max_a,max_b;

	for(a=0;a<=arrsize;a++){

		for(b=a+1;b<=arrsize;b++){

			while(arr[a]>=arr[b]){b++;}

			max = arr[a];

			size = 1;

			printf("[%d",arr[a]);

			if(arr[b]> arr[a]){

				size = 2;

				max = arr[b];

				printf(",%d",max);
```

```
                for(c=b+1;c<=arrsize;c++){
                        if(arr[c]>max){
                                max = arr[c];
                                size++;
                                printf(",%d",max);
                        }
                }
        }
        printf("] size = %d\n",size);
        if(size > maxsize){
                maxsize = size;
                max_a = a;
                max_b = b;
        }
        if(maxsize >= arrsize) break;
    }
    if(maxsize >= arrsize) break;
}
for(a=max_a;a<=max_a;a++){
    max = arr[a];
    fprintf(op, "[%d",arr[a]);
    for(b=max_b;b<=max_b;b++){
        max = arr[b];
        fprintf(op, ",%d",arr[b]);
        for(c=b+1;c<=arrsize;c++){
                if(arr[c]>max){
                        max = arr[c];
                        fprintf(op, ",%d",max);
                }
        }
        fprintf(op, "] size = %d",maxsize);
```

```
            }
        }
        return 0;
}
```

This C code is the 1st prototype of this homework. It runs fort his situations:

- Input file named input.txt
- Output file named output.txt
- Only one array

And it returns:

- Maximum sequence with its size in output.txt
- Some other sequences on terminal screen

BUT I MADE SOME NECESSARY CHANGES WHILE I ADAPTE THIS C CODE TO MIPS ASSEMBLY

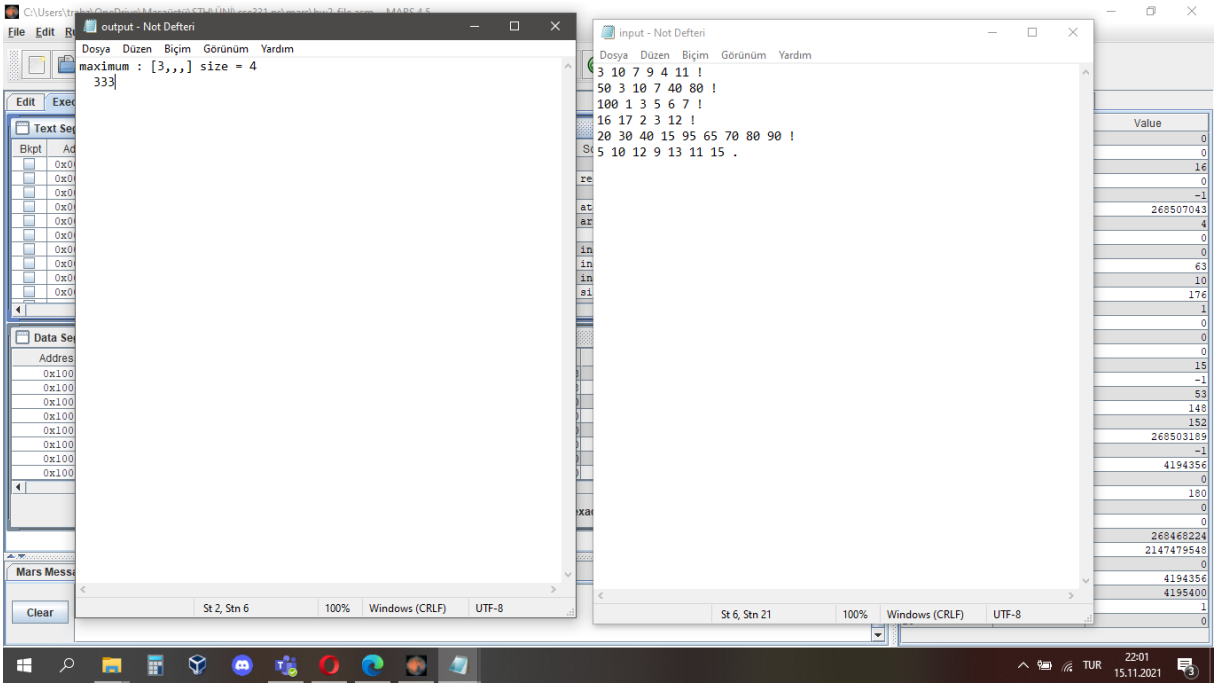
These changes:

- Program accepts more than one array. (I tried up to 6 array but I think it can be more than 6)
- Program's output is different in two different .asm file.
- Hw2_file.asm -> Tries to write maximum sequences and it size to output.txt but it fails. I cannot handle it until last time.
- Hw2_nofile.asm -> It prints maximum sequences to the MARS output screen.
- Both two assembly files reads input from input.txt
- In assembly there is also one major difference from C. It is needing to the atoi and reverse atoi functions. Both two assembly files made atoi part, but hw2_nofile.asm doesn't make reverse atoi part because it doesn't write output to file.

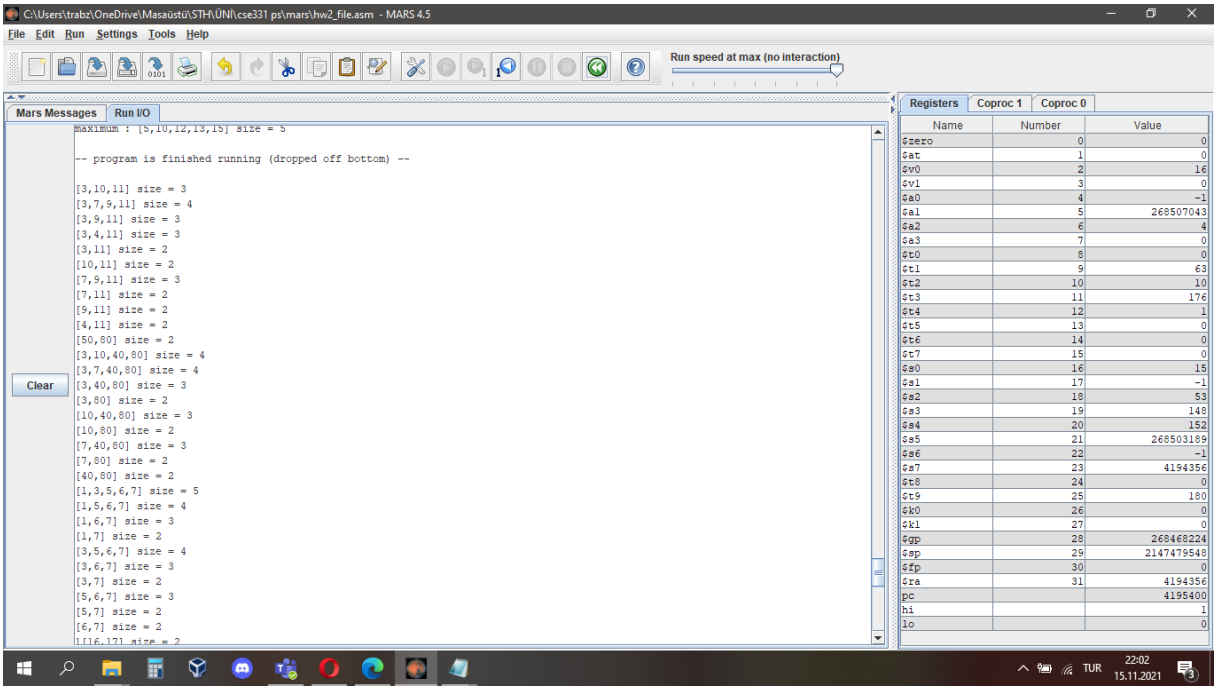
Alghoritm flow of the assembly code

1. Reads input.txt and save all arrays
2. Converts all elements (numbers) of all arrays from char to integer (atoi) and save them in different location
3. Finds the sequences for one array
4. Determines the maximum sequence's indexes and saves them
5. Finds and writes the maximum sequence and its size (hw2_file.asm -> to output.txt / hw2_nofile.asm -> to console)
6. Returns to 3. Flow part for next array
7. When all arrays finish program finishes (in hw1_file.asm also output.txt closes)

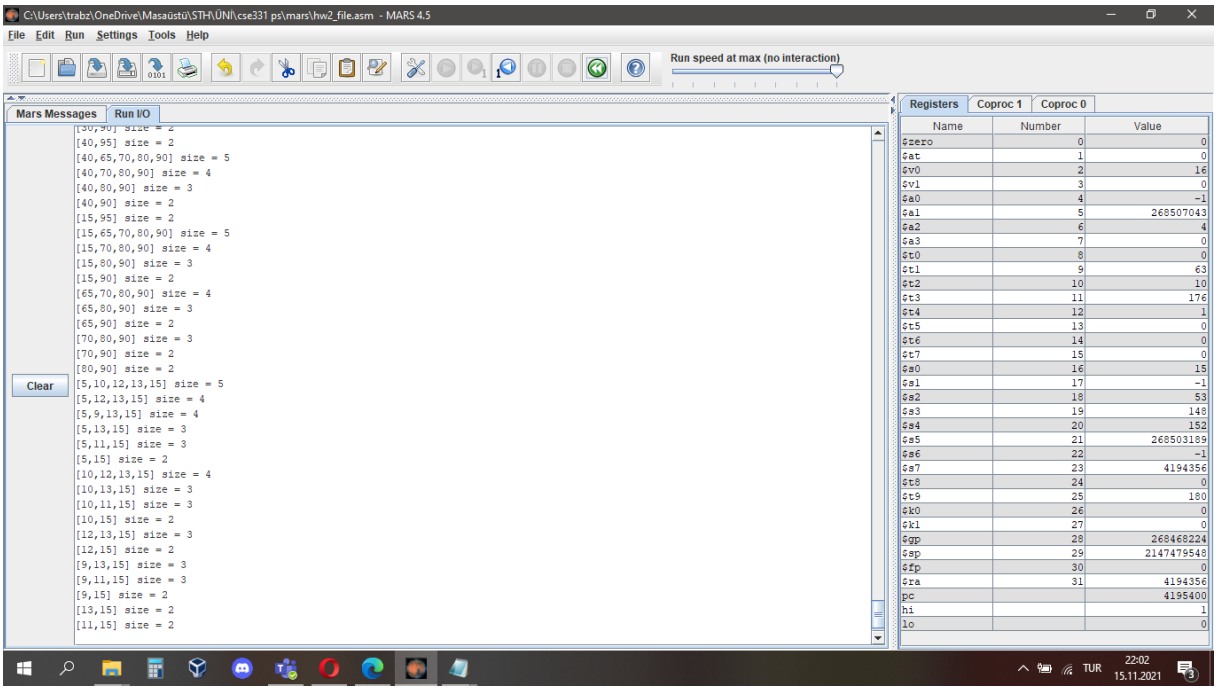
INPUTS & OUTPUTS



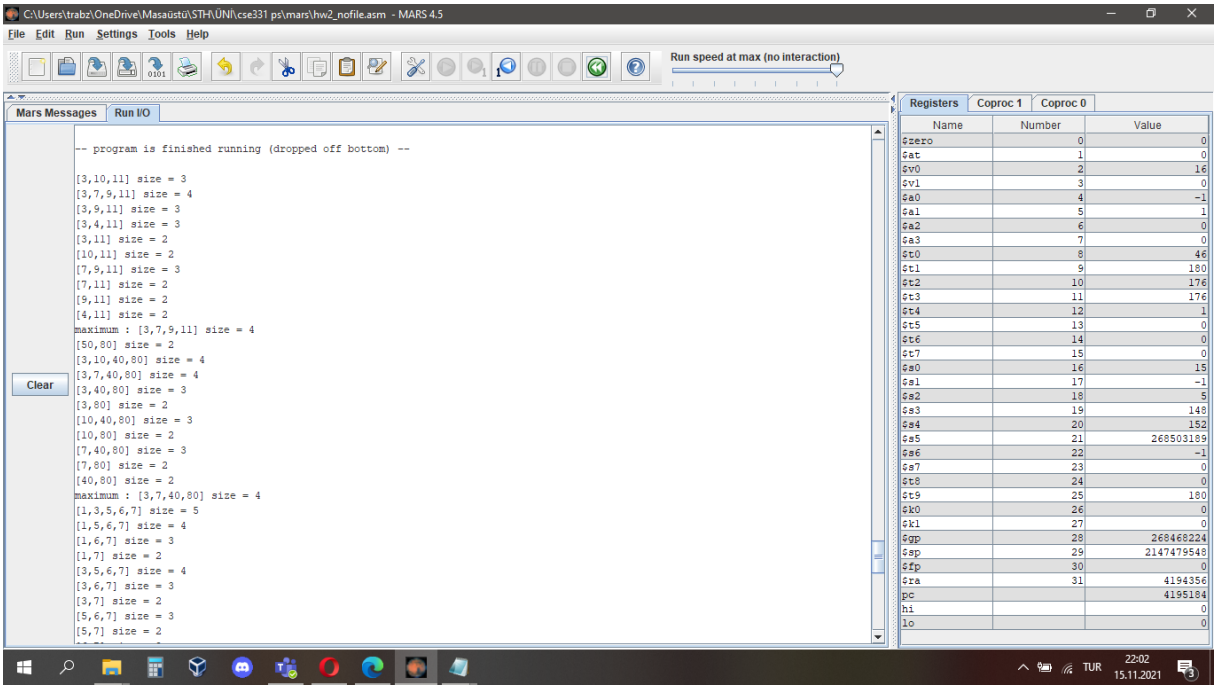
Şekil 1: Output.txt and input.txt for hw1_file.asm



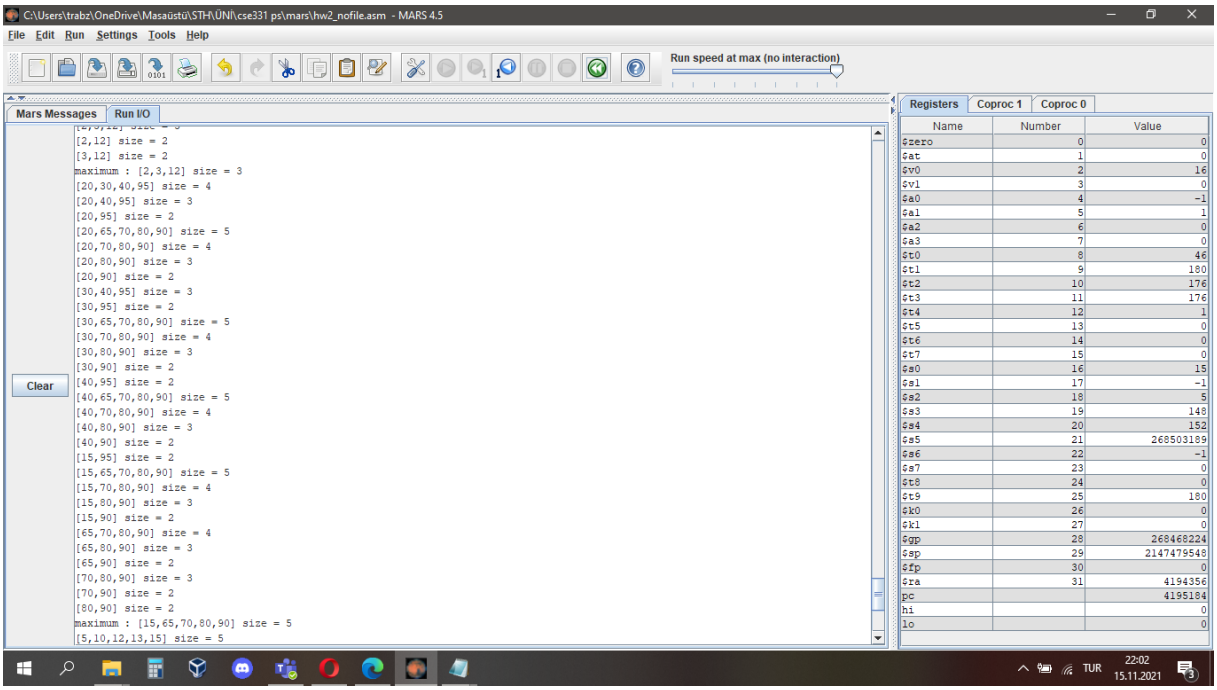
Şekil 2: Other sequences of hw1_file.asm



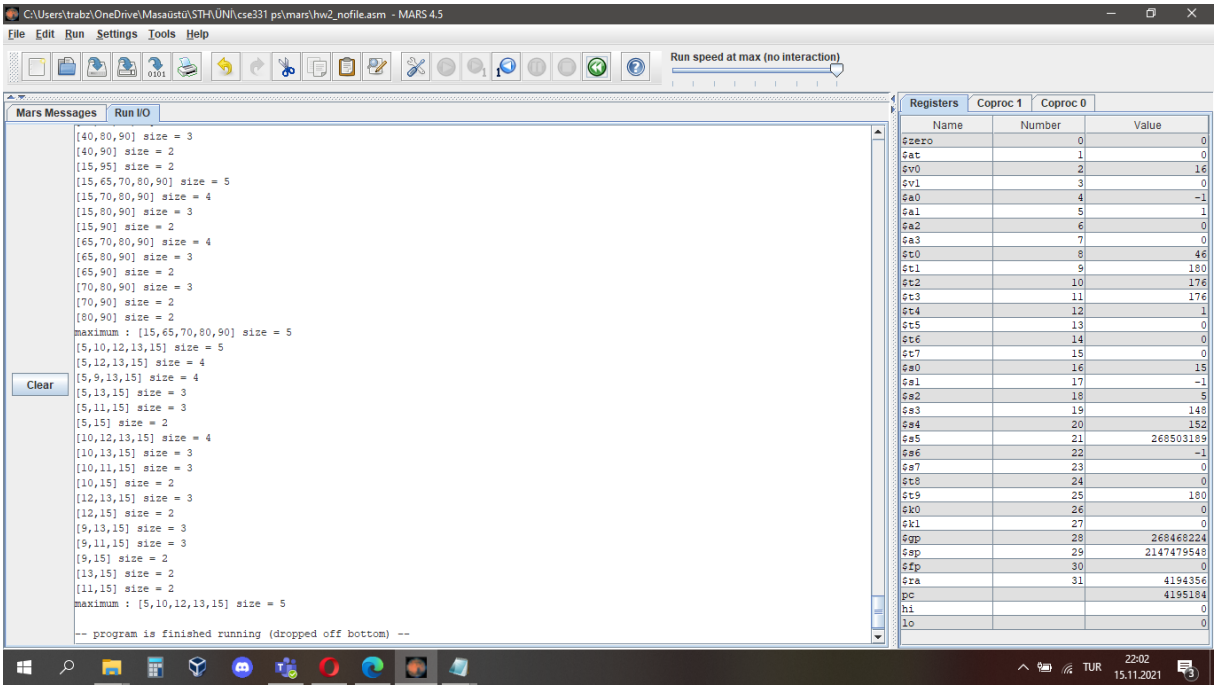
Şekil 3: Other sequences of hw1_file.asm



Şekil 4: Output of hw1_nofile.asm



Şekil 5: Output of hw1_nofile.asm



Şekil 6: Output of hw1_nofile.asm