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Programming Languages Homework II
Due: October 14th by 5pm in LMS system
Total: 300 points

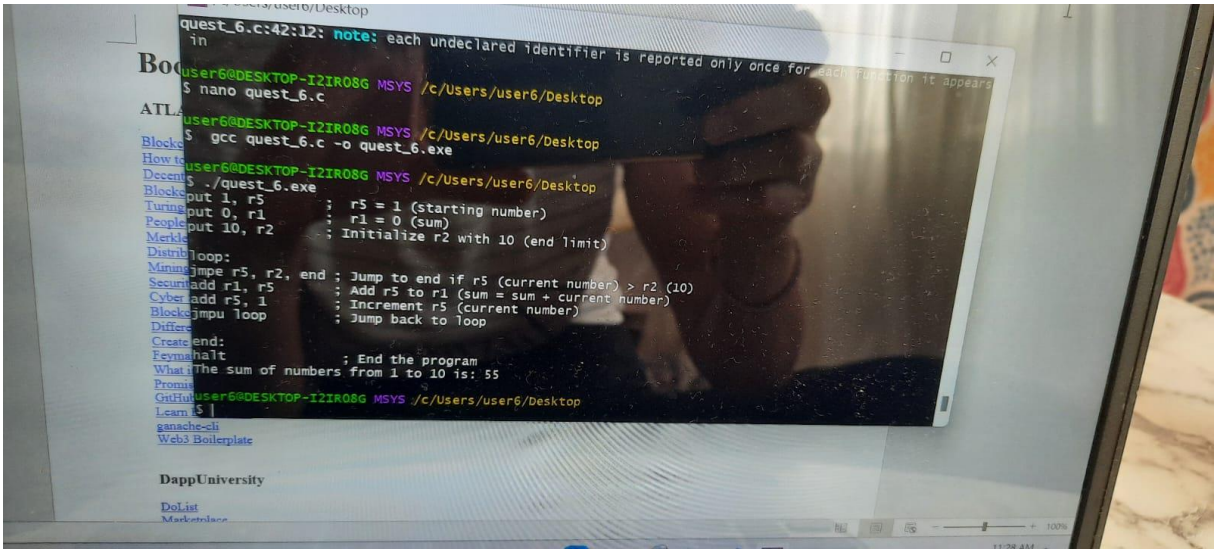
Mark all the steps in order that you finished on this page.

Make sure to decompose your solution into functions. Write a scanner and a parser and otherfuctions. Note that you are writing an interpreter in C for the language given below.
You should be ready for any questions. Failure to answer any of my questions about yourcode will result in no credit and failure in the course because of plagiarism.

Note: Follow the steps given below in your implementation without skipping any steps:

1. Your program file, say, program.sla, should have a program in the Simple Language (SimLan) described below. You can use the program given below but make sure to be ableto write your program in SimLan. Note that your SimLan program should be in a text file. (So far: 2% points)
2. Read your SimLan program line by line and print each line to the terminal so that you cansee your program in the terminal. (So far: 5% points)
3. Implement the following function that you should use in your implementation: strToInt(converts char sequence such as "12" to integer 12). (So far: 15% points)
4. After reading each line, check what command the line contains (put, add, jmpe, jmpu, prn,halt. (So far: 30% points)
5. Depending on the instruction (if-else if-...) you should take a specific step. That is, if it is a put command you know that a constant (after a single space), comma, a register follows, etc.Do what each command asks you to do:
   - put command (performas assignment statement into a register) (so far: 45% pts)
   - add command (so far: 55% points)
   - prn command (so far: 60% points)
   - jmpe command (so far: 75% points)
   - jmpu command (so far: 80% poinst)
   - halt command (you should keep executing commands until the current command isthe halt command) (so far: 90% points)
6. Write a program in SimLan that
   a. adds all the numbers from 1 to 10 (with a loop) and tests it with your Cimplementation. (so far: 100% points)

You will be implementing a C program that understands and executes programs in a **sim**ple **lan**guage, called **SimLan**, described below. Make sure to understand the syntax of the language described below. This language uses the registers on the CPU (central processing unit). Registers are temporary locations that you can use




```
#include <stdio.h>
 #include <stdlib.h>
 #include <string.h>
 #define MAX_LINE_LENGTH 100 // Function to execute the logic for adding numbers from 1 to 10
 int add_numbers() {
int sum = 0; // Initialize sum
int current = 1; // Start with 1
int limit = 10; // Limit to 10 // Loop to add numbers from 1 to 10
while (current <= limit) {
sum += current; // Add current to sum
 current++; // Increment current }
 return sum; // Return the final sum
}
 int main() { FILE *file = fopen("adds_num.sla", "r");
 if (file == NULL) {
 perror("Error opening file");
return EXIT_F;
 }
 char line[MAX_LINE_LENGTH];
// Read the file line by line (optional)
while (fgets(line, sizeof(line), file)) {
// Print the line (for debugging purposes)
```

printf("%s", line); } fclose(file); // Close the file /

/ Execute the addition logic

int sum_result = add_numbers();

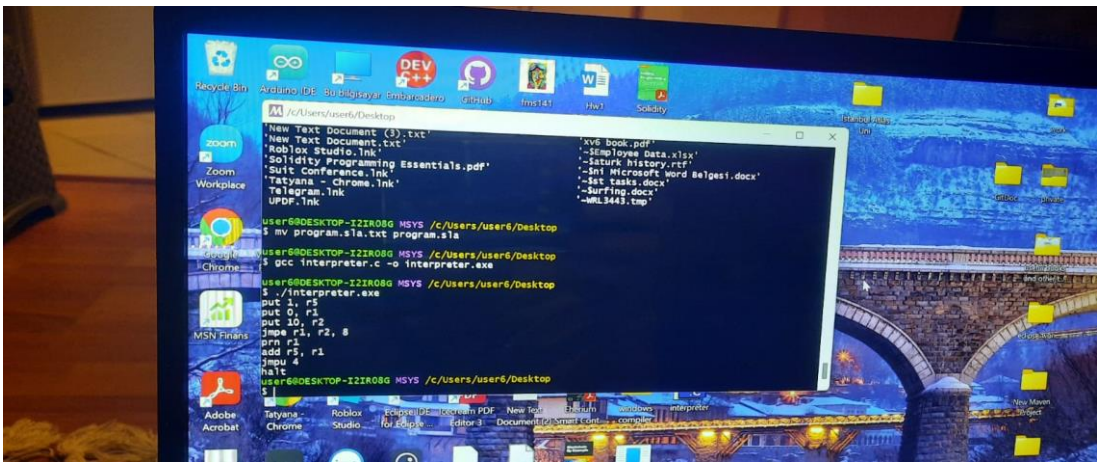
printf("The sum of numbers from 1 to 10 is: %d\n", sum_result);

return EXIT_S;

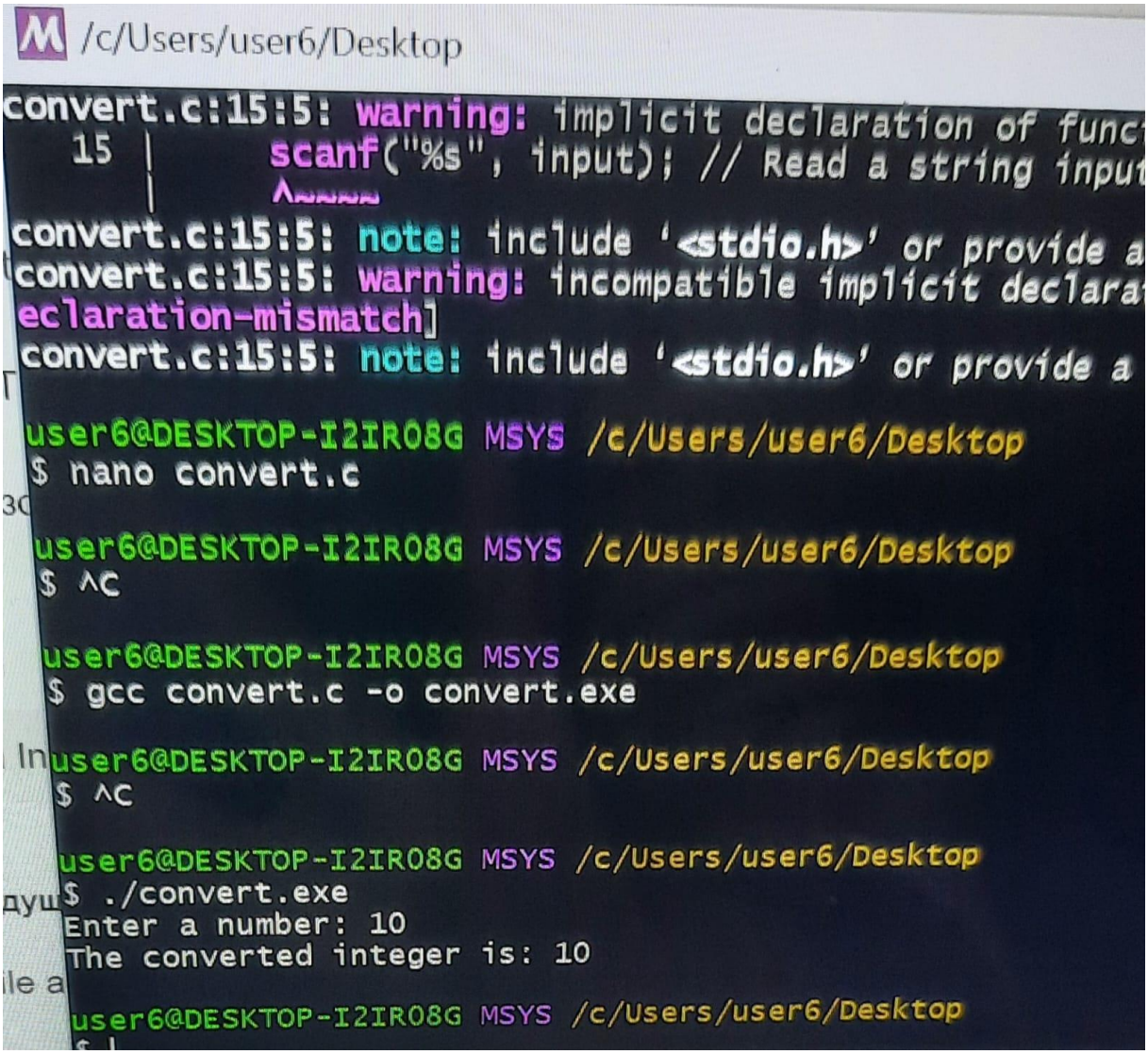
}

Photos of other questions:

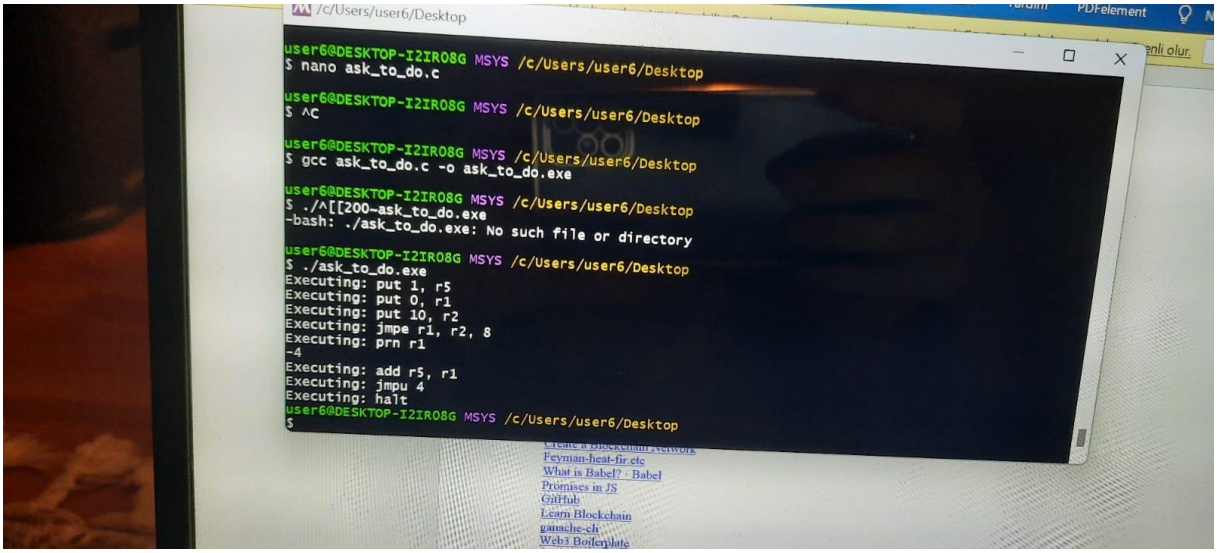
1

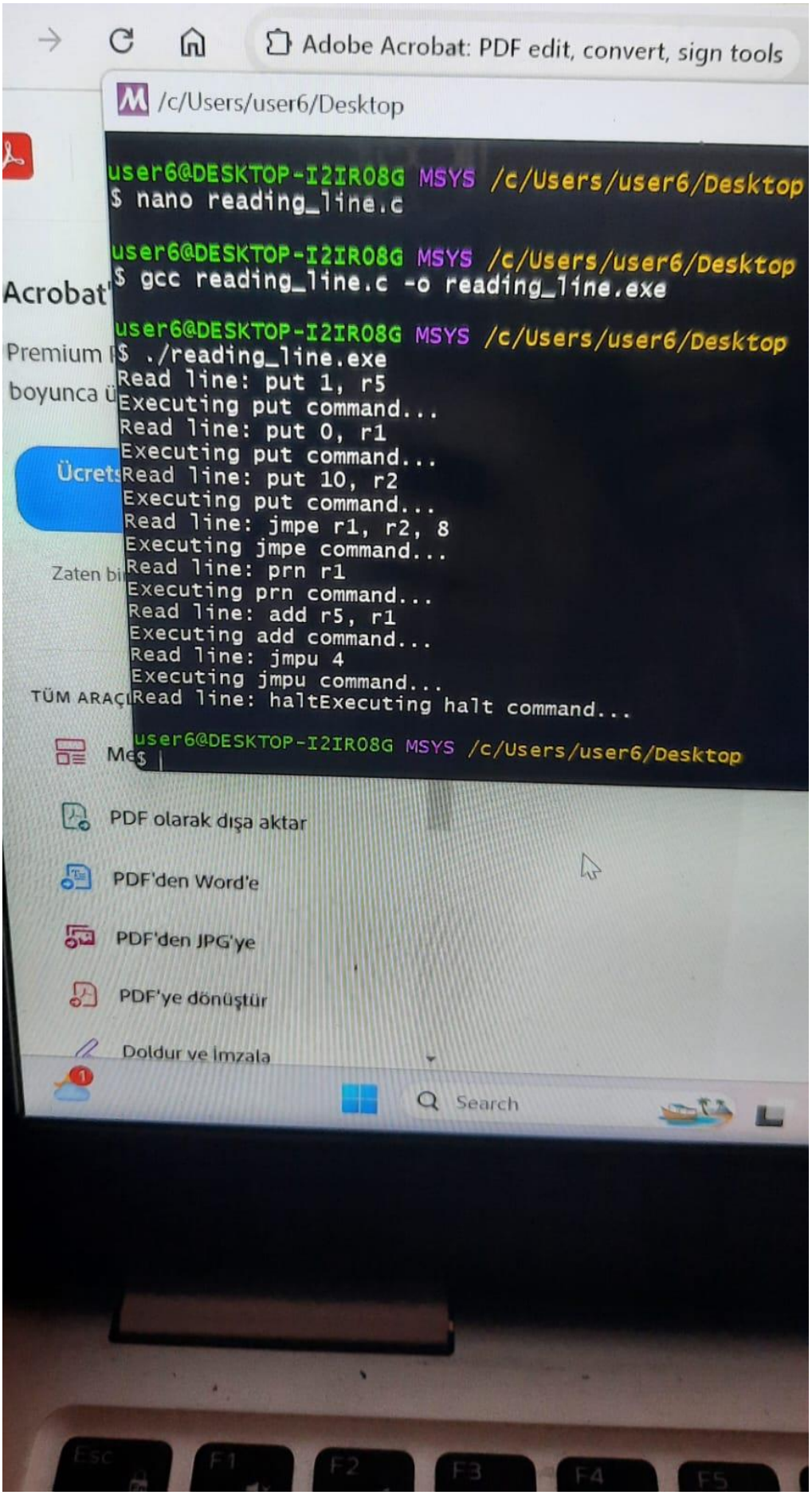


2


/c/Users/user6/Desktop
convert.c:15:5: warning: implicit declaration of func
15 | scanf("%s", input); // Read a string inpu
convert.c:15:5: note: include '<stdio.h>' or provide a
convert.c:15:5: warning: incompatible implicit declara
eclaration-mismatch]
convert.c:15:5: note: include '<stdio.h>' or provide a
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ nano convert.c
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ ^C
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ gcc convert.c -o convert.exe
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ ^C
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ ./convert.exe
Enter a number: 10
The converted integer is: 10
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop

3.


/c/Users/user6/Desktop
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ nano ask_to_do.c
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ ^C
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ gcc ask_to_do.c -o ask_to_do.exe
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ ./^[[200~ask_to_do.exe
-bash: ./ask_to_do.exe: No such file or directory
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$ ./ask_to_do.exe
Executing: put 1, r5
Executing: put 0, r1
Executing: put 10, r2
Executing: jmpe r1, r2, 8
Executing: prn r1
-4
Executing: add r5, r1
Executing: jmpu 4
Executing: halt
user6@DESKTOP-I2IR08G MSYS /c/Users/user6/Desktop
$
Feyman-heat-fir.etc
What is Babel? · Babel
Promises in JS
GitHub
Learn Blockchain
ganache-cli


Adobe Acrobat: PDF edit, convert, sign tools
/c/Users/user6/Desktop
user6@DESKTOP-I2IRO8G MSYS /c/Users/user6/Desktop
$ nano reading_line.c
user6@DESKTOP-I2IRO8G MSYS /c/Users/user6/Desktop
$ gcc reading_line.c -o reading_line.exe
user6@DESKTOP-I2IRO8G MSYS /c/Users/user6/Desktop
$ ./reading_line.exe
Read line: put 1, r5
Executing put command...
Read line: put 0, r1
Executing put command...
Read line: put 10, r2
Executing put command...
Read line: jmpe r1, r2, 8
Executing jmpe command...
Read line: prn r1
Executing prn command...
Read line: add r5, r1
Executing add command...
Read line: jmpu 4
Executing jmpu command...
Read line: haltExecuting halt command...
user6@DESKTOP-I2IRO8G MSYS /c/Users/user6/Desktop
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PDF'den Word'e
PDF'den JPG'ye
PDF'ye dönüştür
Doldur ve İmzala
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