Roshan D. Avhad.

21111006

DevOps

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Assignment - 02

Ans:-

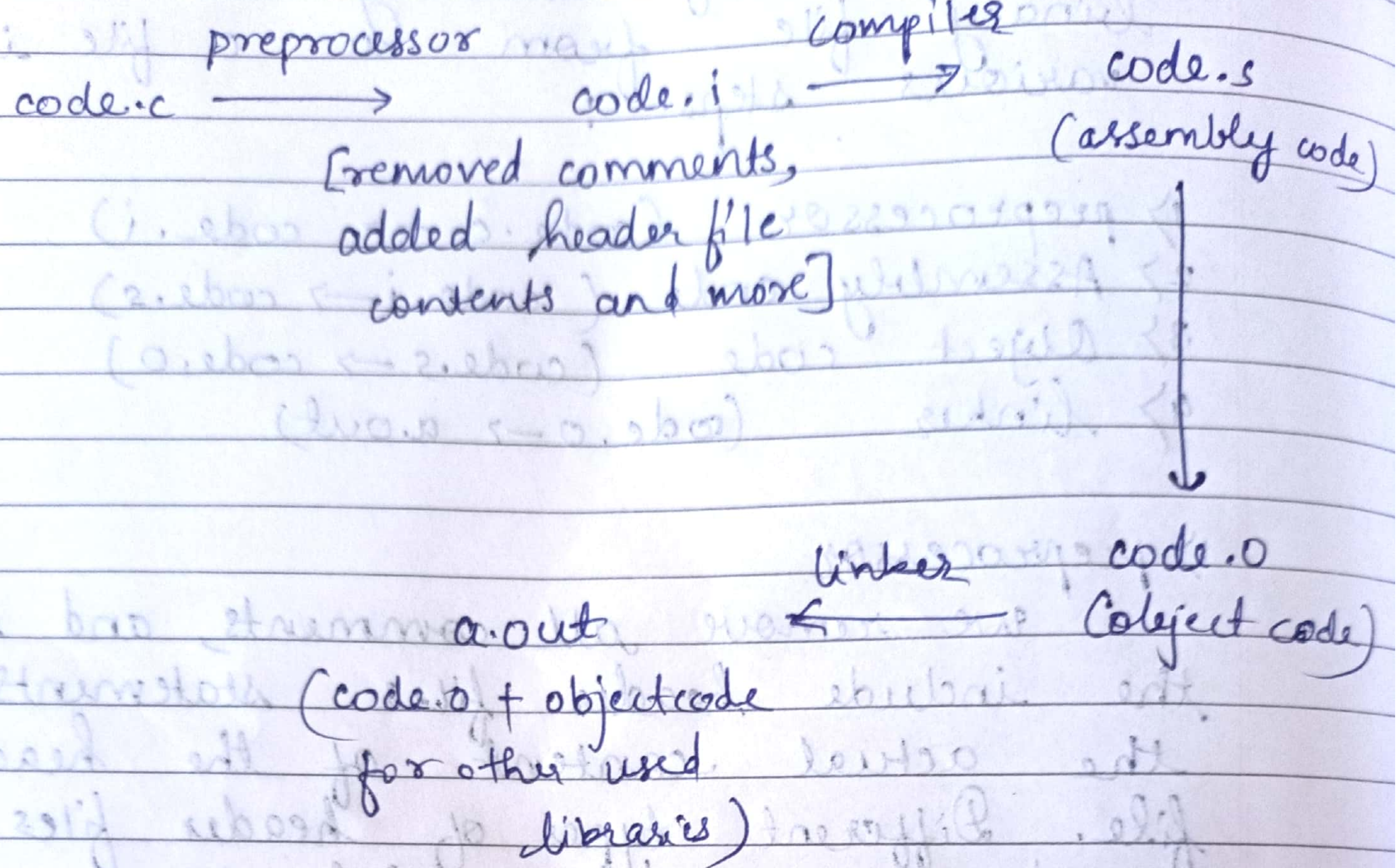
The process of creating an executable binary file from a C file involves various steps!

1> preprocessor (code.c → code.i)
2> Assembly code (code.i → code.s)
3> Object code (code.s → code.o)
4> linker (code.o → a.out)

1> preprocessor
we remove all comments, and replace the include header files statements with the actual content of the header file. Different types of header files are used like stdio.h, math.h, etc.
The command to see the preprocessed code is gcc -E code.c
After generating the preprocessed C source code, the C source code is sent to the compiler section.

2) The compiler will convert the code code.i into assembly code code.s.

The command to generate the assembly code is gcc -S code.c
The code and header files have been converted to a short and optimized way.


preprocessor
code.c
code.i
[removed comments, added header file contents and more]
compiler
code.s
(assembly code)
code.o
(object code)
linker
a.out
(code.o + objectcode for other used libraries)

3) The assembler converts assembly code code.s to object code code.o. The command to generate object code is

```
gcc -c code.c
```

4) Linking :- The linker combines the object files into a single executable binary file. The compiler has no idea about the working of the functions like scanf, printf. the information of each of these functions is kept in the corresponding

library, The linker does this task.
The goal of linker is to link the object file to the library functions so that the programme may be run as an executable file.

To create the final executable, use the command:

```
gcc code.c.
```