Presentation N°3 Introduction to Software Engineering

SA PROCESS of CFG GENERATOR

201160417 Bjarke DAMGAARD LARSEN
201160526 Jesse ONG PHO

Summary

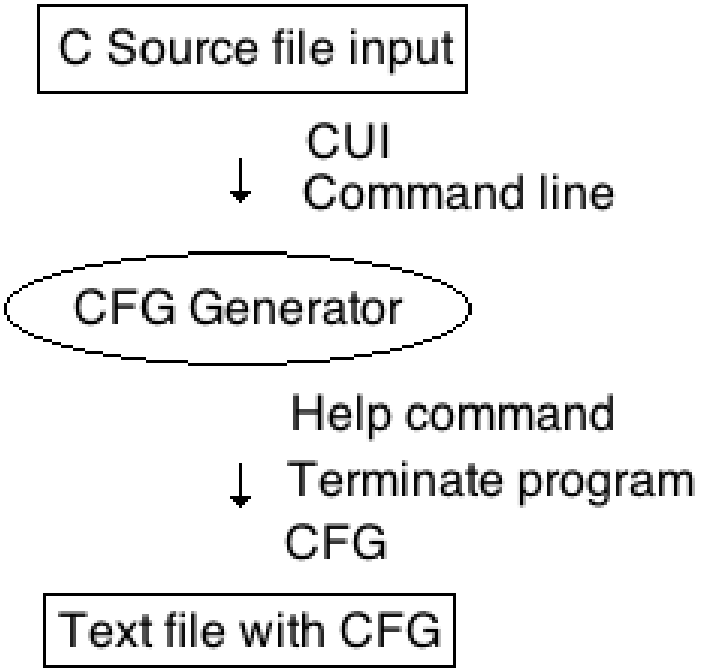
- Statement of purpose
- System context diagram
- Event list
- DFD
- Data Dictionary
- Process specification

Statement of purpose

Draw a Control Flow Graph (CFG):

- A CFG is a graph of a source code for an easier understanding
- One input and one output
- The program receives a source code in input
- The program analyzes the source code and create a CFG
- The output is a CFG and a report
- The C source code doesn't have user defined header files.
- The C source code doesn't include pointers.

System context diagramm

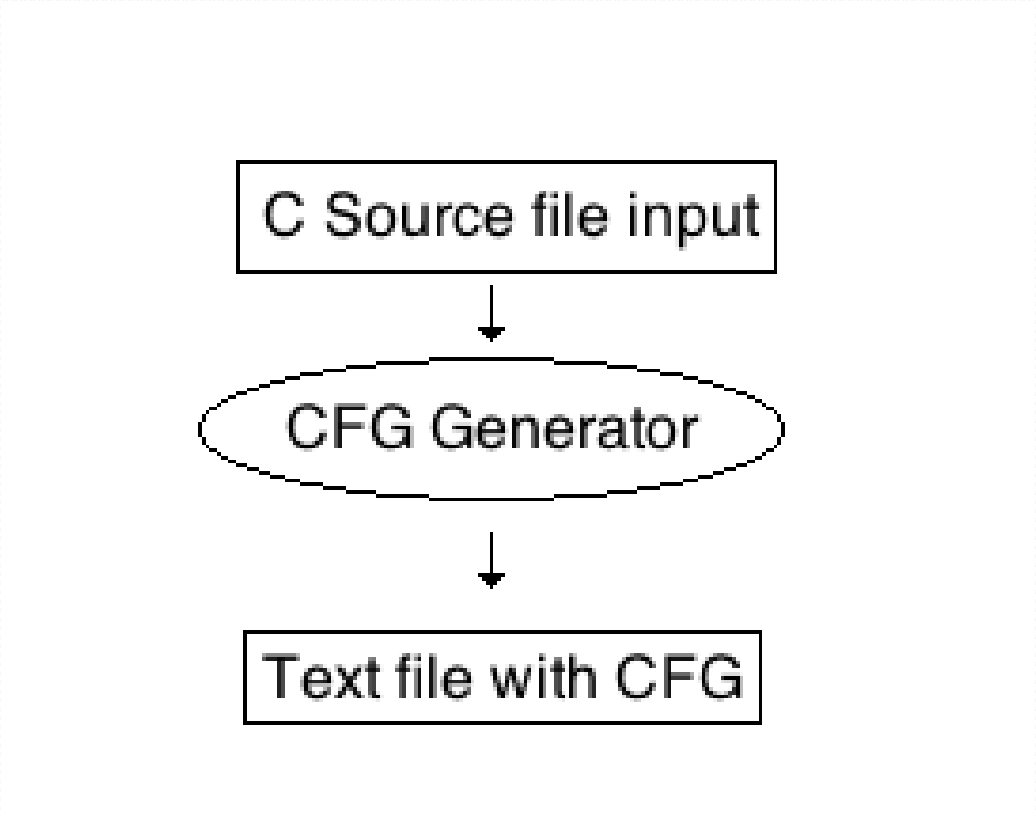


Event List

C File input	The file containing the code we want to convert to CFG
Text file output	The file containing the CFG of the c source code input

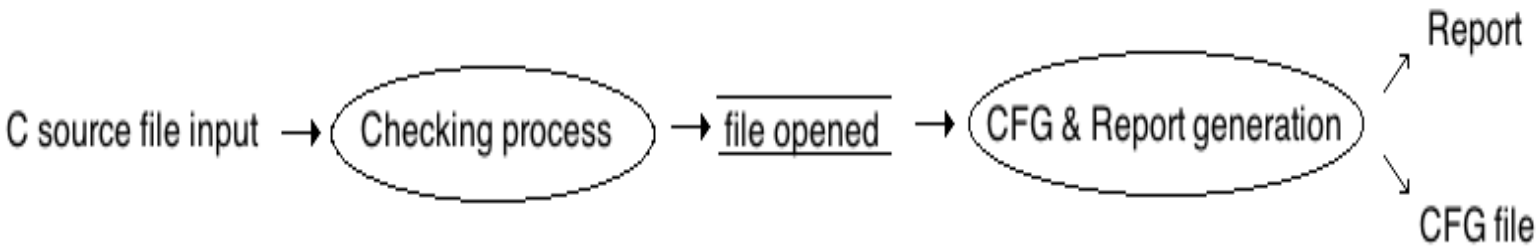
Data Flow Diagram

- Level 0



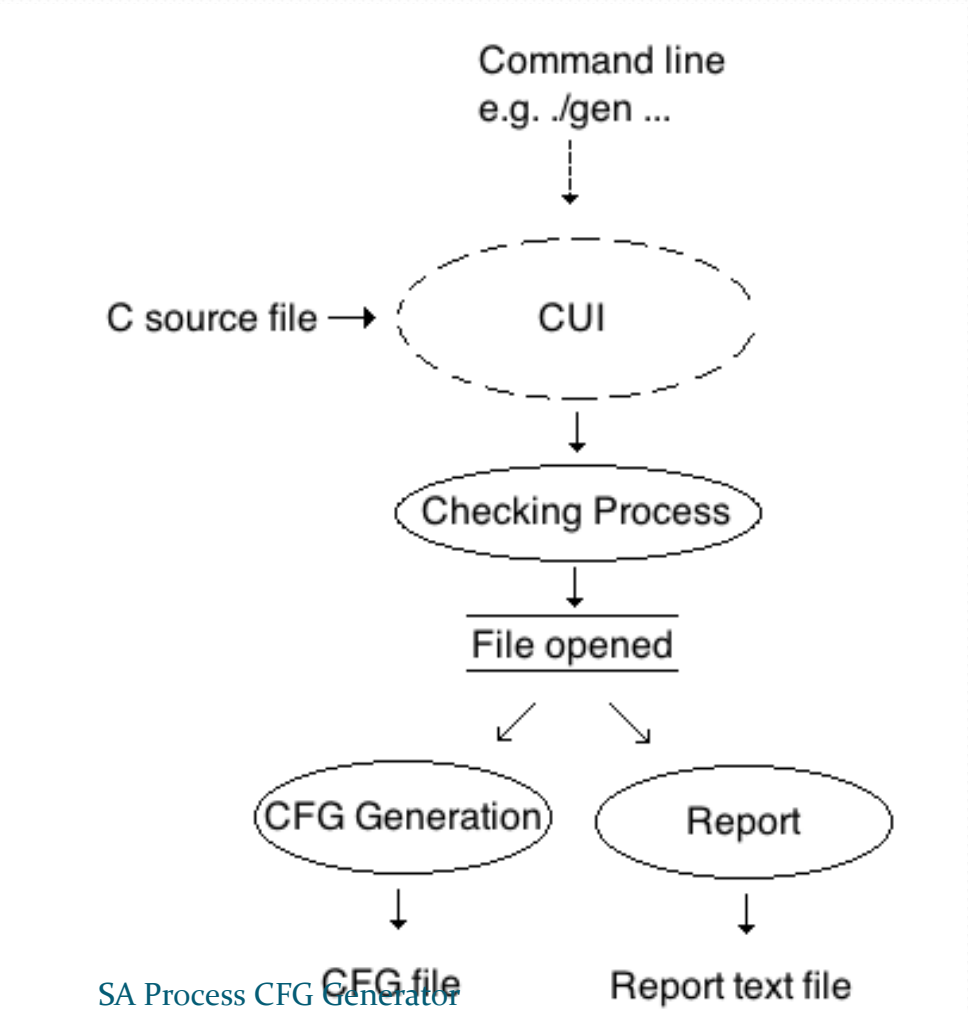
Data Flow Diagram

- Level 1



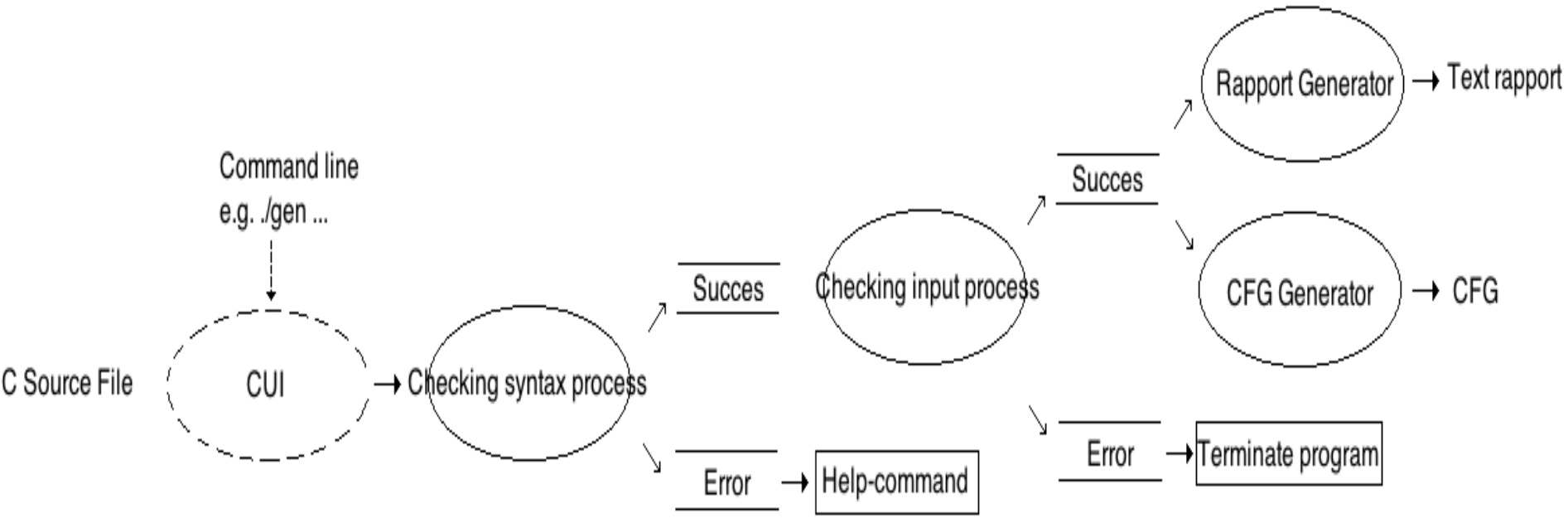
Data Flow Diagram

- Level 2



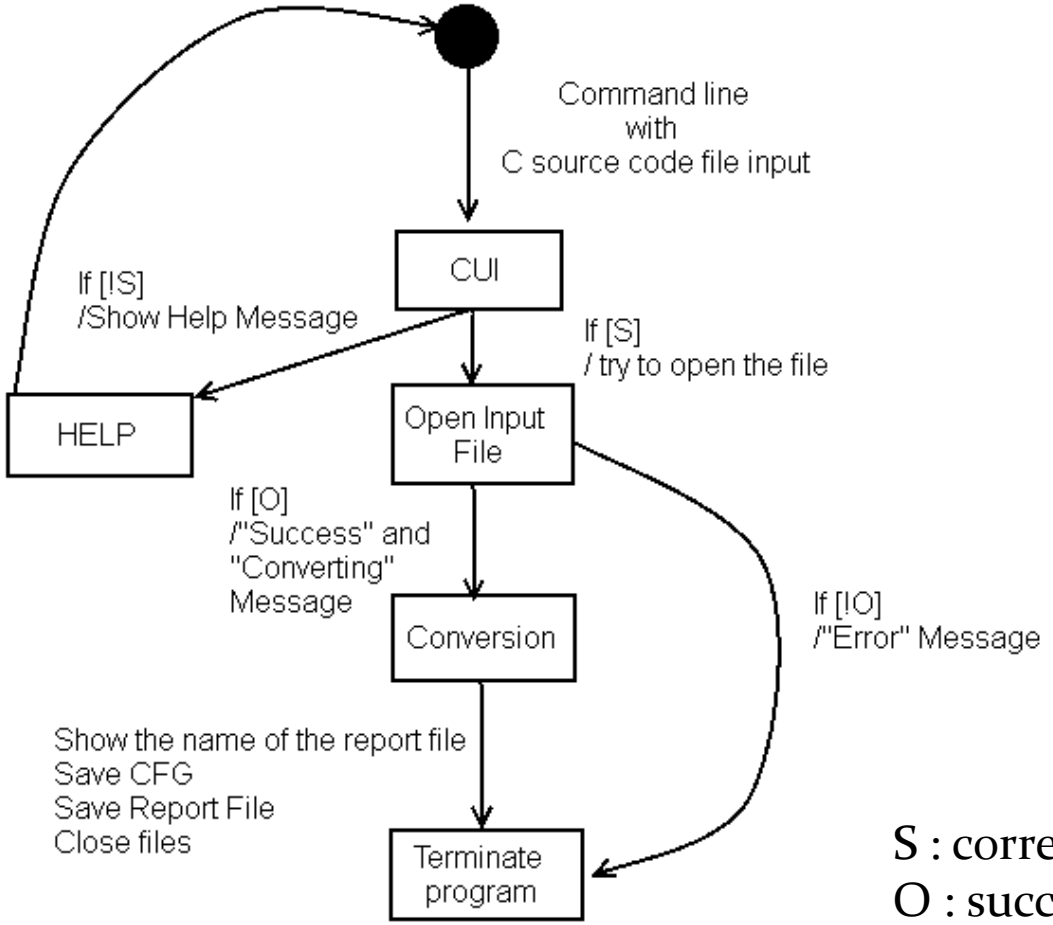
Data Flow Diagram

- Level 3



Data Flow Diagram

- Level 4



S : correct Syntax
O : success to open the file

Data Dictionnary

Input/Output Event	Description	Format/Type
C source code input file	The file containing the code we want to convert to CFG.	File with c extension
CFG file output	The file containing the CFG of the c source code input.	File with txt extension
CUI	The user uses this User interface with command line to execute the program. Check the syntax of the command line.	./CG Inputcode.c result.txt
Input Checking	Define if the c code source inputted successfully.	“success”/”error”
Conversion	Conversion of the c source code file to CFG	“converting”
Report	Report shows execution order of c source code.	Text file

Process Specification

Reference	1.1
Name	Character User Interface (CUI)
Input	Command line
Ouput	Execution of the programm
Process description	The user type a line with this syntax : “./gen InputCode.c result.txt”. “./” is the element to execute the code. “gen” is the name of the program. “InputCode.c” is the c source file we want to convert. “result.txt” is the file in which the CFG is going to be modelize.

Process Specification

Reference	1.2
Name	Checking Syntax process
Input	Command line
Ouput	Success/Error
Process description	This process checks the syntax of the command line wrote by the user. If this syntax is incorrect, an error message and the “Help” option are shown and the program is not executed. Otherwise the code is executed.

Reference	1.3
Name	Checking Input Process
Input	C source file
Ouput	Success/Error
Process description	This process checks the input file entered by the user. If the file is inputted successfully, the program shows “success” message. Or in error case, the program shows “error» and terminates the program.

Process Specification

Reference	1.4
Name	Generation Generation
Input	C source file
Ouput	File containing the CFG
Process description	The execution of the program. Analysis of each line of the inputted file, creation of the output CFG file and conversion of the c code to CFG

Reference	1.5
Name	Report Generation
Input	C source file
Ouput	File containing the report
Process description	The Report shows the list of 'states' and 'edges' of CFG. This process creates or opens the file from the command line and fills it during the execution of the code.

THE END