CFG Structured analysis & Structured Design

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Structured Analysis

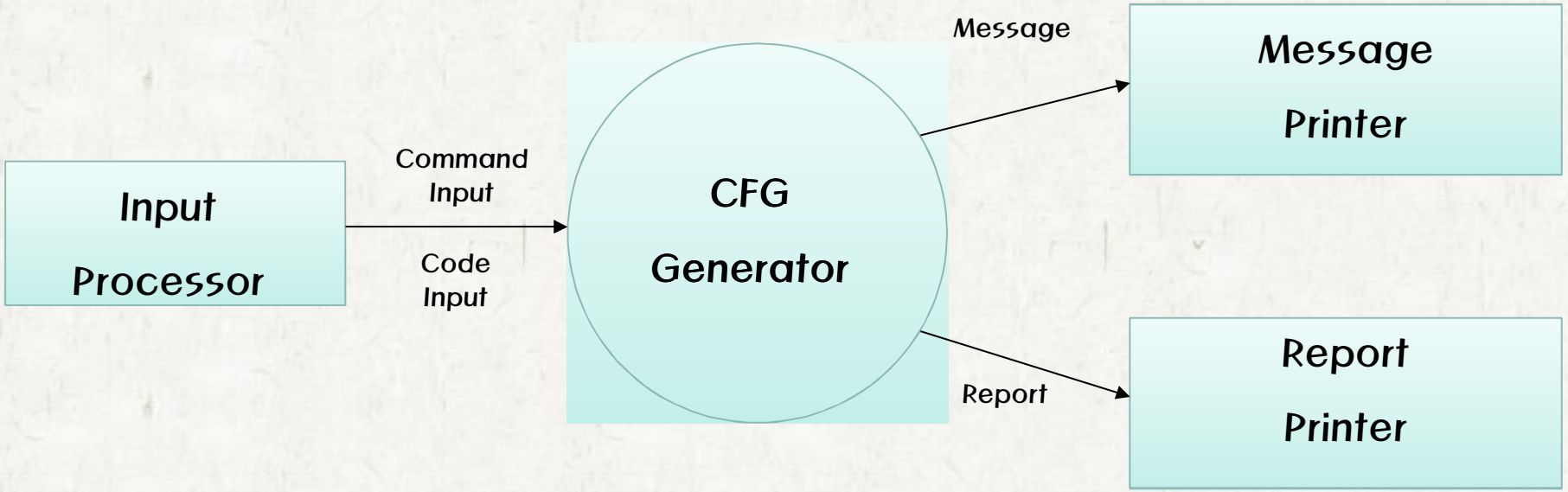
Statement of Purpose

- It is the program that accept a C code and print CFG
- If user input wrong form of command, program print help message
- The program can optimize code through CFG that was converted and drown
- All branches start with a '{'
  And ends with '}'

Statement of Purpose(Cont.)

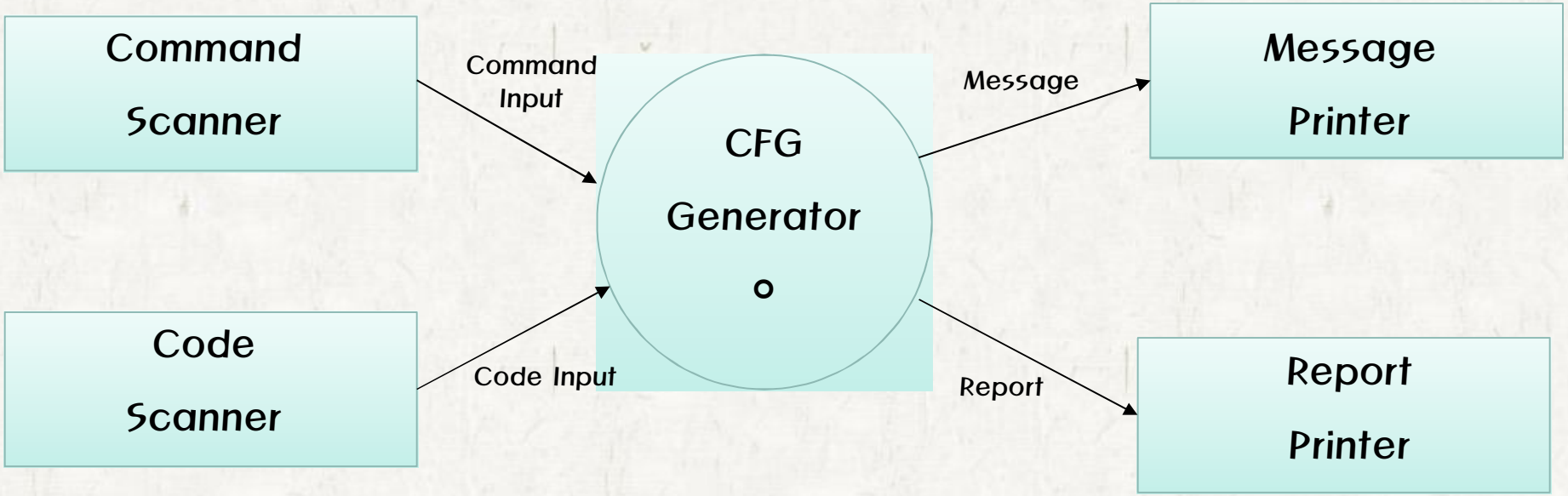
- Constraints
  - Size of C code that was inputed should be less than two hundred line.
  - The code should involve Main Function.
  - C code should be read by single file
  - The program shouldn't operate about header File that user defined
  - The program should operate code that not use pointer

System Context Diagram



Event List	
Input/Output Event	Description
Command Input	Receive a command from Input Processor
Code Input	Receive a C code from Input Processor
Message	Prints system messages to Message Printer
Report	Print CFG and .txt file generate

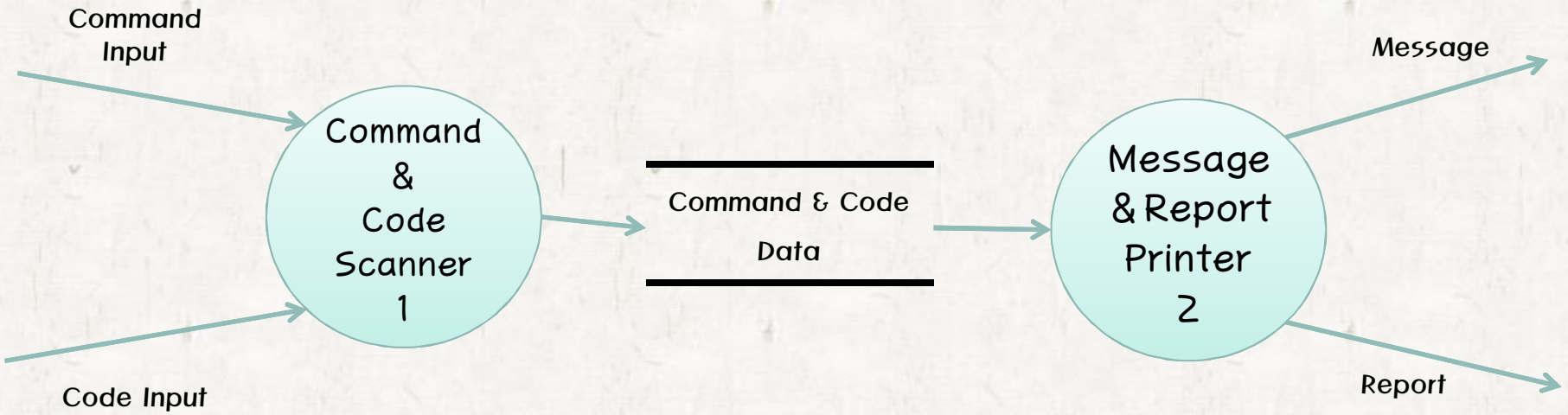
DFD Level 0


Command Scanner
Command Input
CFG Generator o
Message
Message Printer
Code Scanner
Code Input
Report
Report Printer

DFD Level 0 – Data Dictionary

Input/Output	Description	Type
Command Input	Receive the Command	Char*
Code Input	Receive the C code to be converted	.c file
Message	Prints system messages to Message Printer	Char*
Report	Print CFG and .txt file generate	Char* .txt file

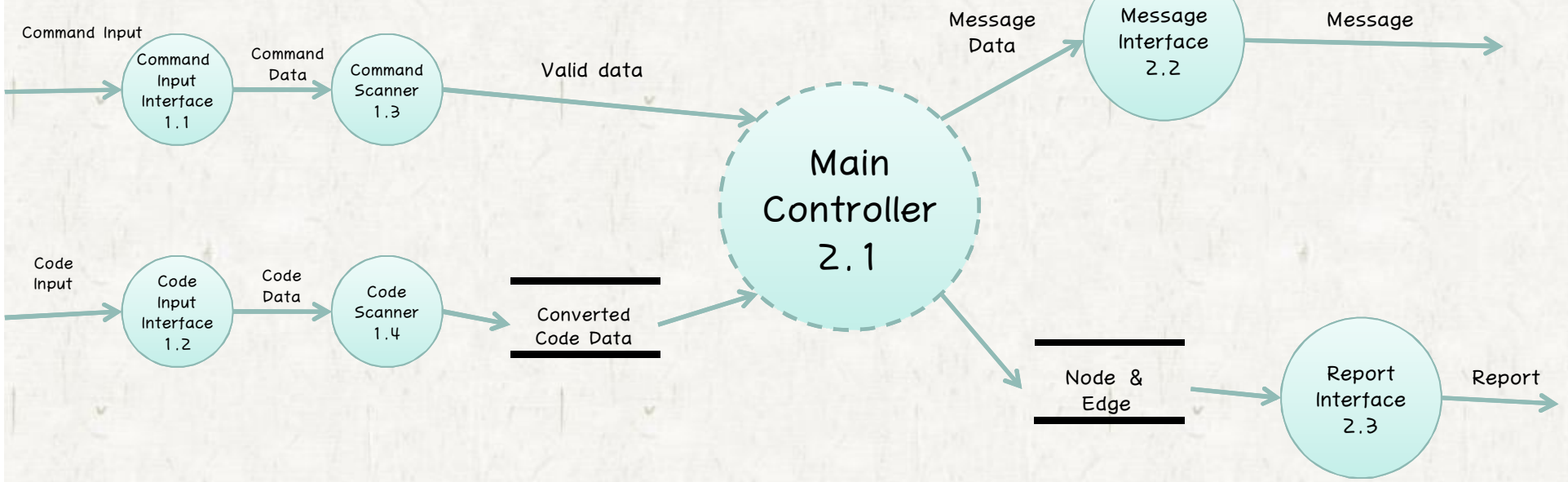
DFD Level 1



DFD Level 1 Data Dictionary

Input/Output Event	Description	Type
Command & Code Data	Pass the stored information	integer struct

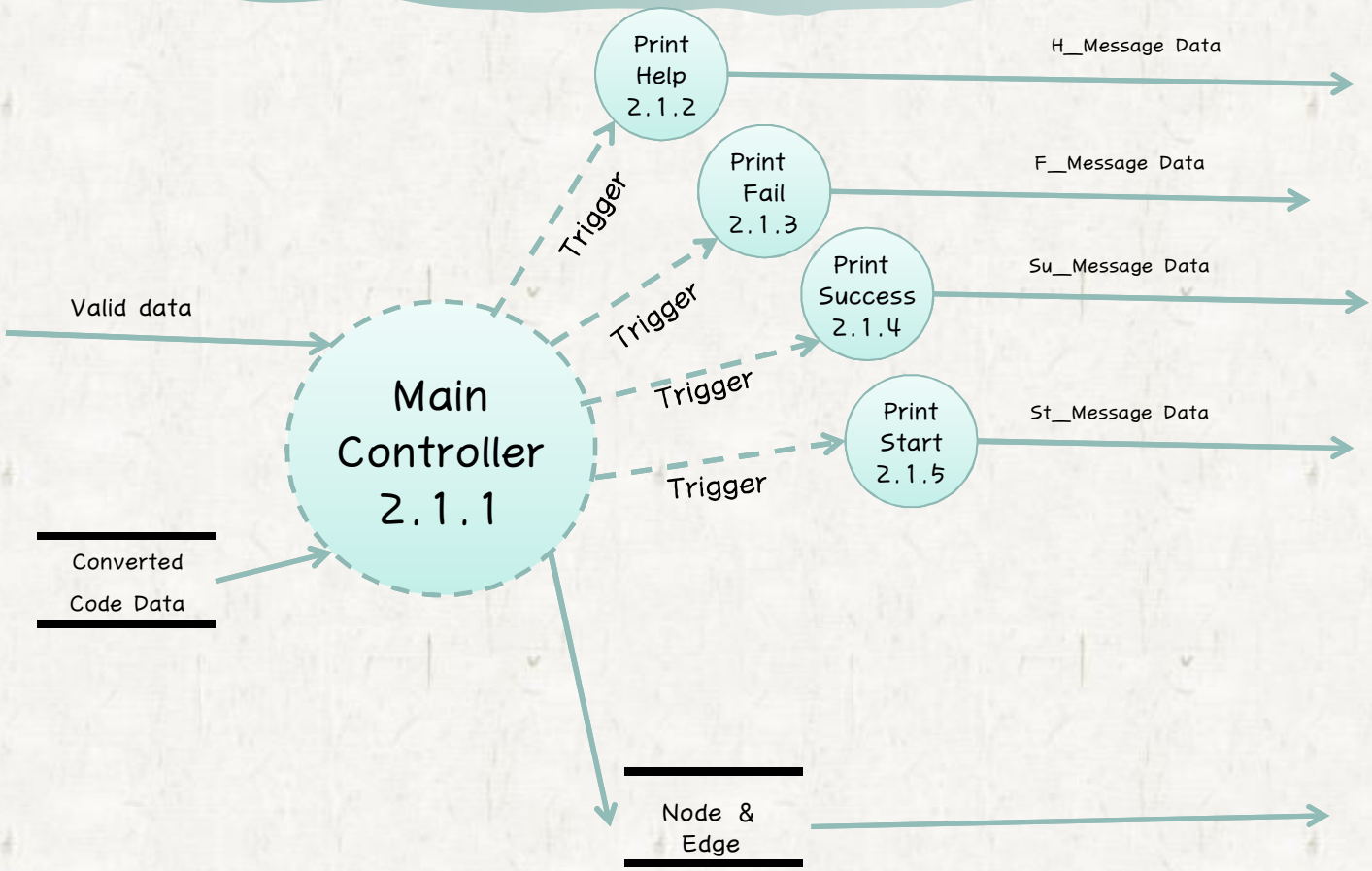
DFD Level 2


Command Input
Command Input Interface 1.1
Command Data
Command Scanner 1.3
Valid data
Message Data
Message Interface 2.2
Message
Main Controller 2.1
Code Input
Code Input Interface 1.2
Code Data
Code Scanner 1.4
Converted Code Data
Node & Edge
Report Interface 2.3
Report

DFD Level 2 – Data Dictionary

Input/Output	Description	Type
Command Data	Pass the stored command data	Char*
Valid Data	Pass the integer data to system which can judge it	integer
Code Data	Pass the FILE pointer	FILE*
Converted Code Data	Pass the Converted Code Data	struct
Message Data	Pass the Message Data	Char*
Node & Edge	Pass the Stored Node & Edge Data	Char*[]

DFD Level 3

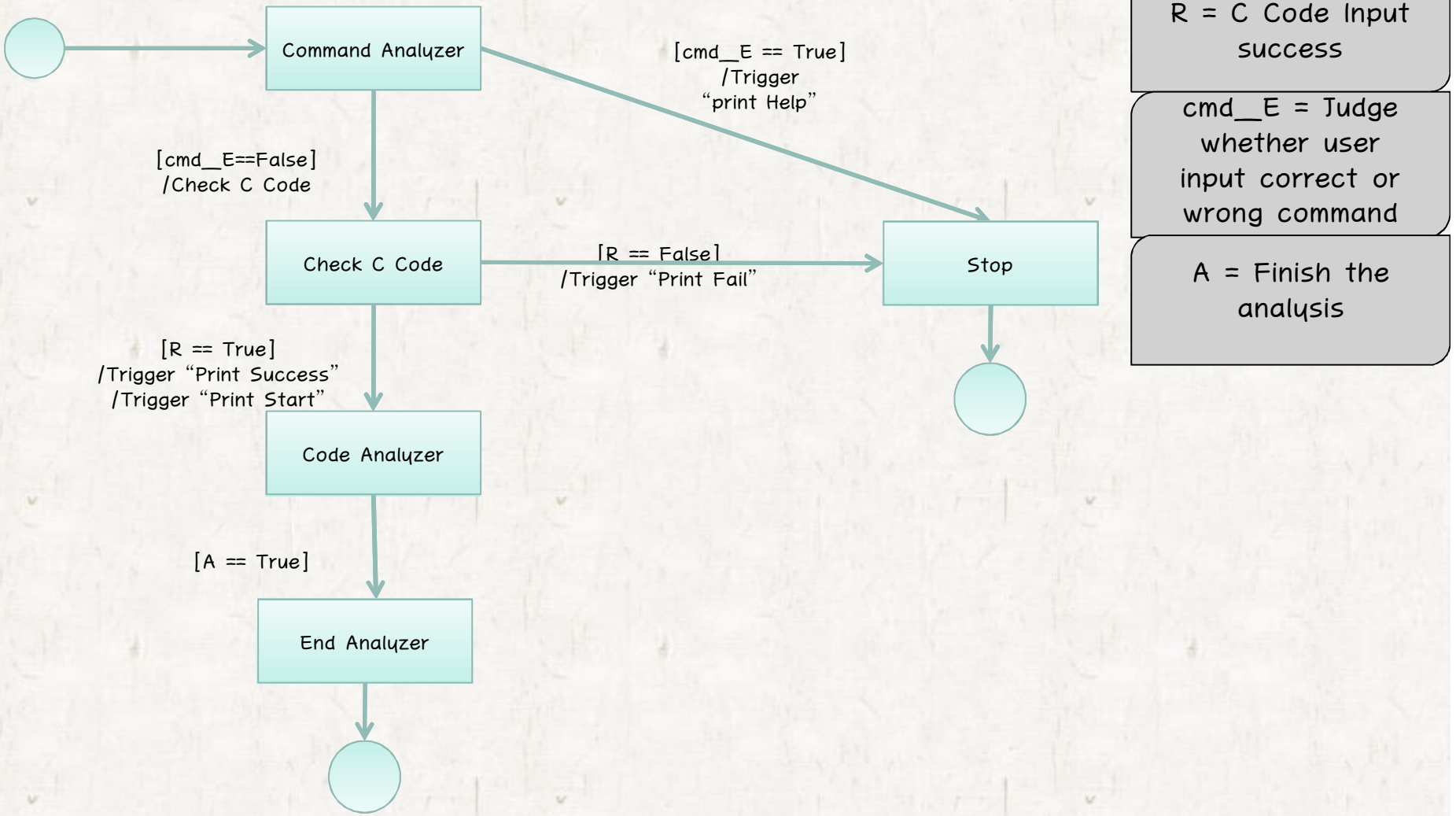

Print Help 2.1.2
H_Message Data
Print Fail 2.1.3
F_Message Data
Print Success 2.1.4
Su_Message Data
Print Start 2.1.5
St_Message Data
Trigger
Trigger
Trigger
Trigger
Valid data
Main Controller 2.1.1
Converted Code Data
Node & Edge

DFD Level 3 – Data Dictionary

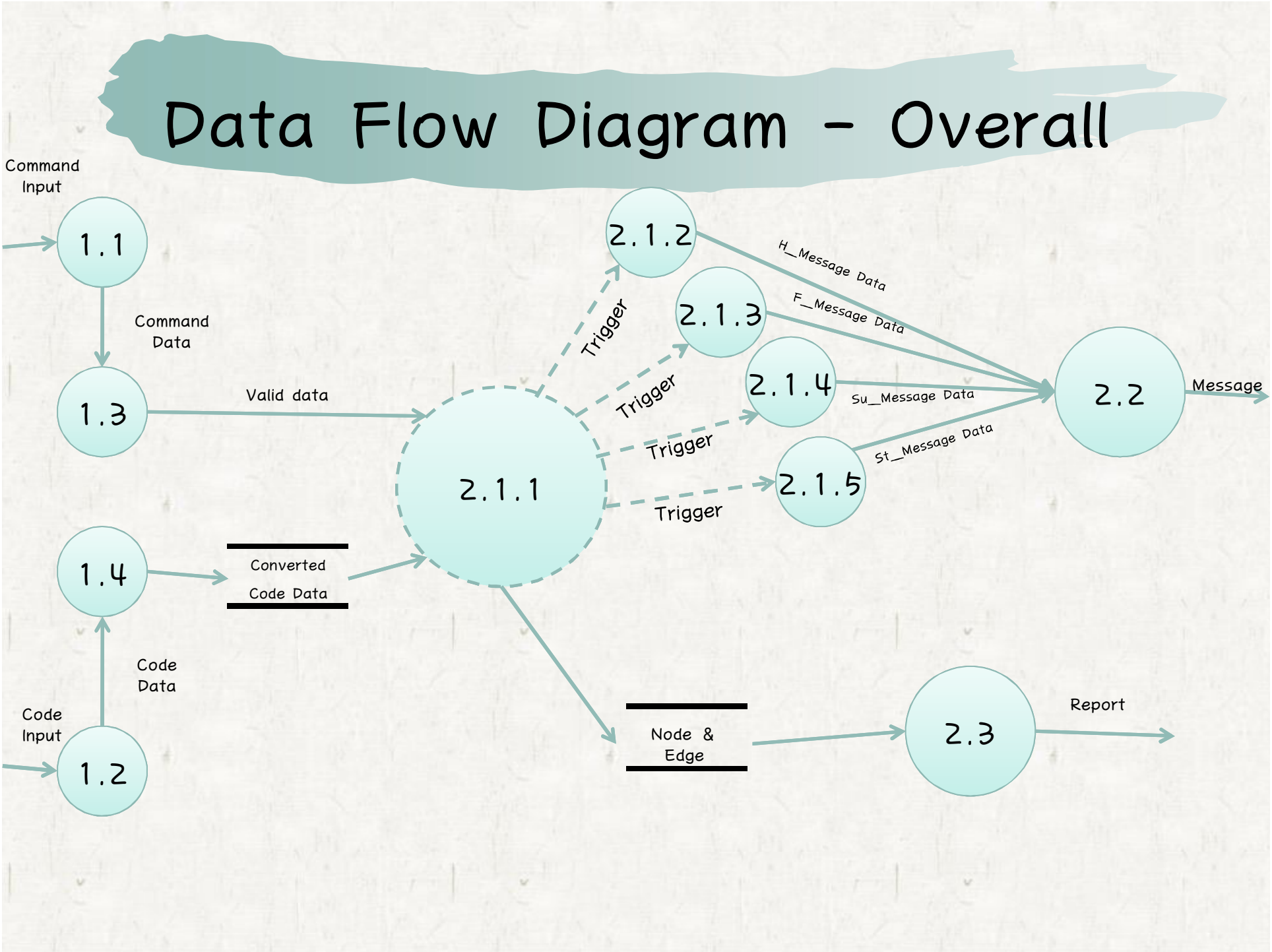
Input/Output	Description	Type
H_Message Data	Pass the Help Message data	Char*
F_Message Data	Pass the Fail Message data	Char*
Su_Message Data	Pass the Success Message Data	Char*
St_Message Data	Pass the Start Message Data	Char*
Node & Edge	Stored the Node & Edge	Char*

DFD Level 4

State Transition Diagram for Controller 2.1.1



Data Flow Diagram - Overall



Process Specification

Reference No.	1.1
Name	Command Input Interface
Input	Command Input
Output	Command Data
Process Description	Receive a Command Input of the Command Scanner, and converts it to Command Data

Reference No.	1.2
Name	Code Input Interface
Input	Code Input
Output	Code Data
Process Description	Receive a .c File and open the File and pass the FILE pointer

Process Specification

Reference No.	1.3
Name	Command Scanner
Input	Command Data
Output	Valid Data
Process Description	Receive the Command Data and converts it to Integer data that Main Controller distinguishs it (1=Correct Command , 2=To fail FILE Input , 3= Send the Help message)

Name	Code Scanner
Input	Code Data
Output	Converted Code Data
Process Description	Reads a Code data line by line, and converts it to new Code Data

Process Specification

Reference No.	2.1.1
Name	Main Controller
Input	Valid Data , Converted code Data
Output	Node & Edge, trigger
Process Description	It is a main controller that determines CFG Generator After input Valid Data and Converted Code Data, delivery Node & Edge and trigger
Reference No.	**2.1.2**
Name	Print Help
Input	Trigger
Output	H_Message Data
Process Description	Accept generated Trigger from Main Controller and send H_Message Data.

Process Specification

Reference No.	2.1.3
Name	Print Fail
Input	Trigger
Output	F_Message Data
Process Description	Accept generated Trigger from Main Controller and send F_Message Data.

Reference No.	2.1.4
Name	Print Success
Input	Trigger
Output	Su_Message Data
Process Description	Accept generated Trigger from Main Controller and send Su_Message Data.

Process Specification

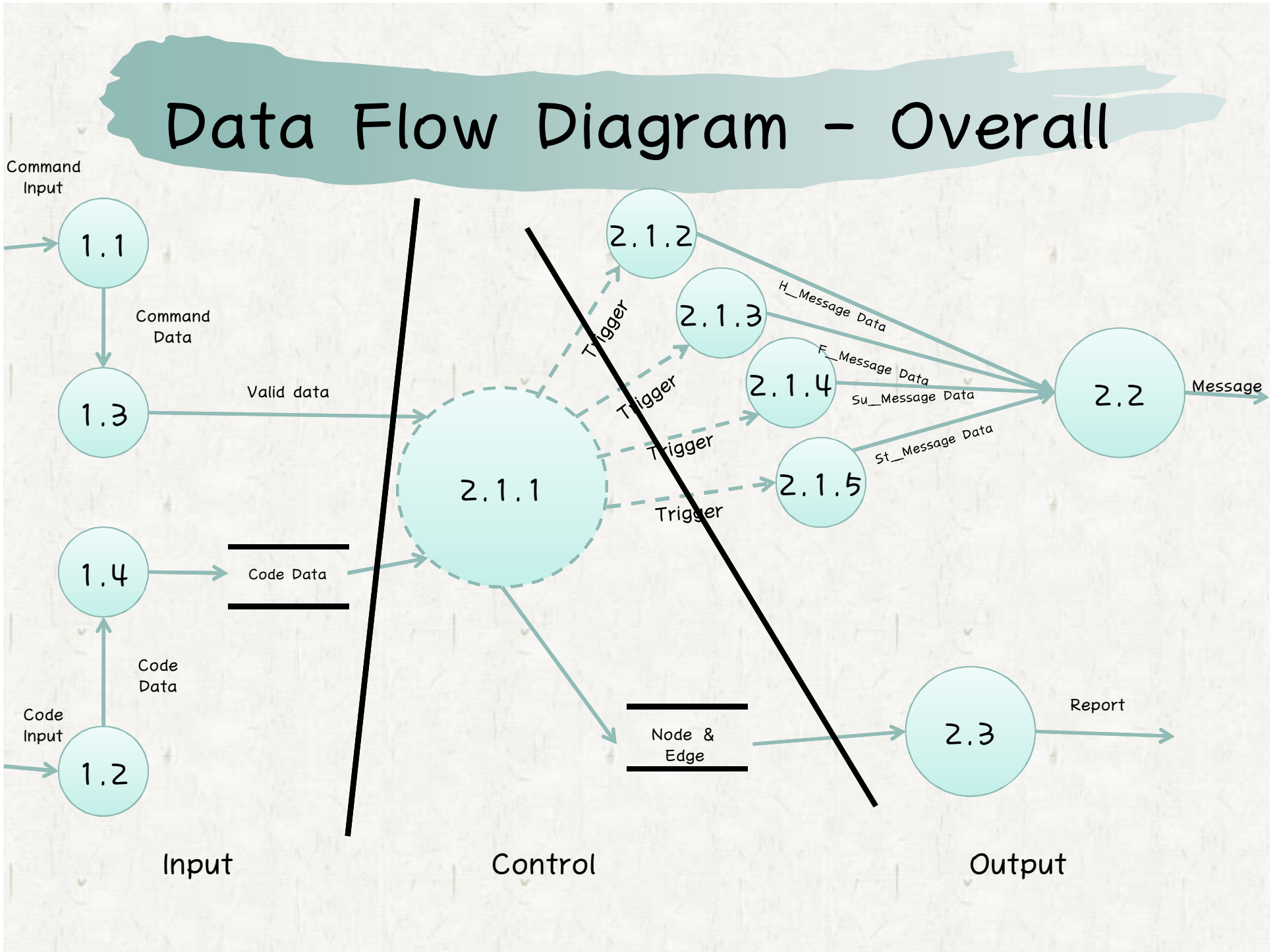
Reference No.	2.1.5
Name	Print Start
Input	Trigger
Output	St_Message Data
Process Description	Accept generated Trigger from Main Controller and send St_Message Data.

Process Specification

Reference No.	2.2
Name	Message Interface
Input	Message Data
Output	Message
Process Description	Convert input Message Data to Message that will be printed.

Reference No.	2.3
Name	Report interface
Input	Node & edge data
Output	Report
Process Description	Take node & edge data and converts it to string type and saves the string into a text file and then prints it to the screen

Structured Design


Data Flow Diagram - Overall
Command Input
1.1
Command Data
1.3
Valid data
1.4
Code Data
Code Data
Code Input
1.2
2.1.1
2.1.2
2.1.3
2.1.4
2.1.5
Trigger
Trigger
Trigger
Trigger
H_Message Data
F_Message Data
Su_Message Data
St_Message Data
2.2
Message
Node & Edge
2.3
Report
Input
Control
Output

Structured Charts