

Robot Vacuum Cleaner Control Flow Graph



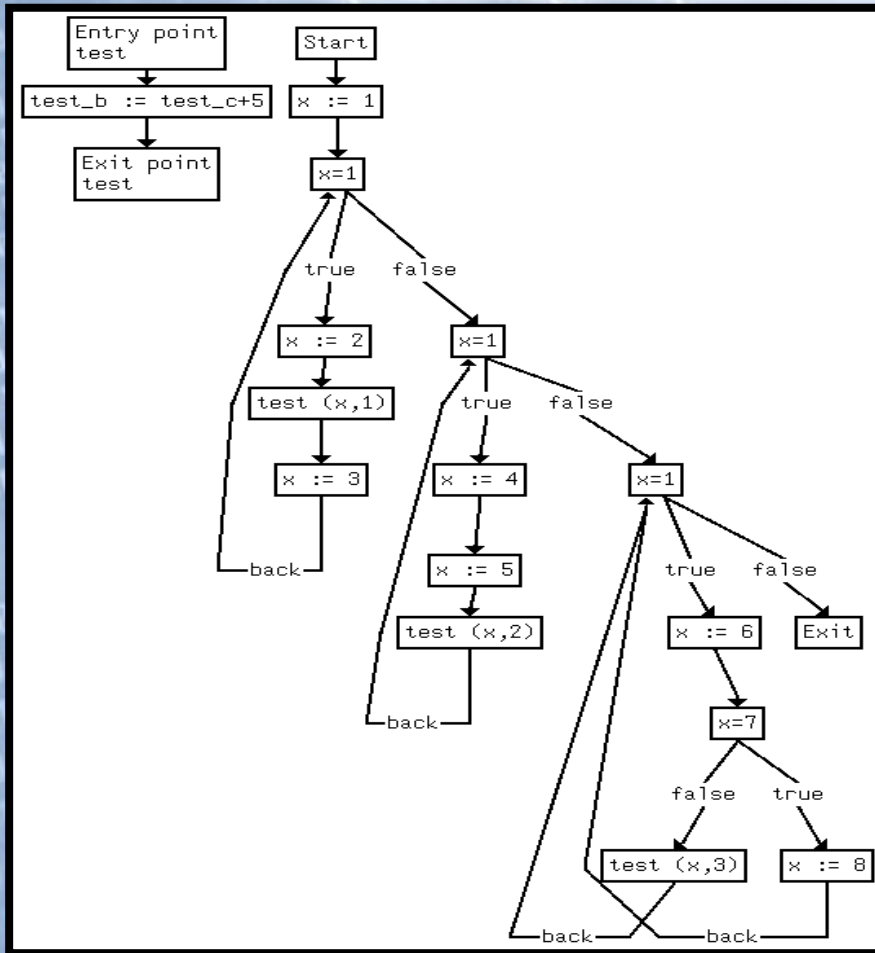
Class B - T1

200611523	한정석
200611525	홍준택
200611230	육근웅
200711445	엄호경

Contents

- CFG(Control Flow Graph) 정의
- CFG 관련 알고리즘들
- RVC Control Flow Graph

CFG의 정의?

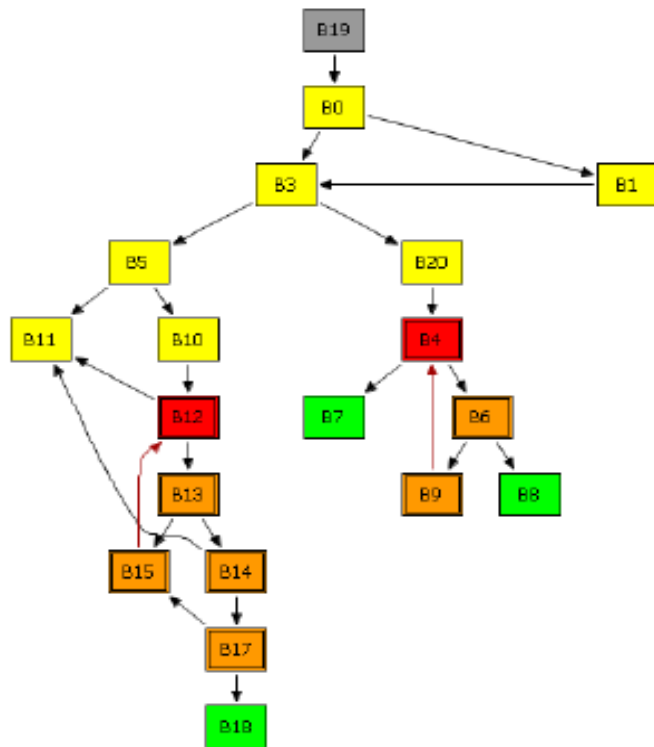


노드 간의 에지를 통하여
제어 흐름 정보를
그래프로 표현하는 방법

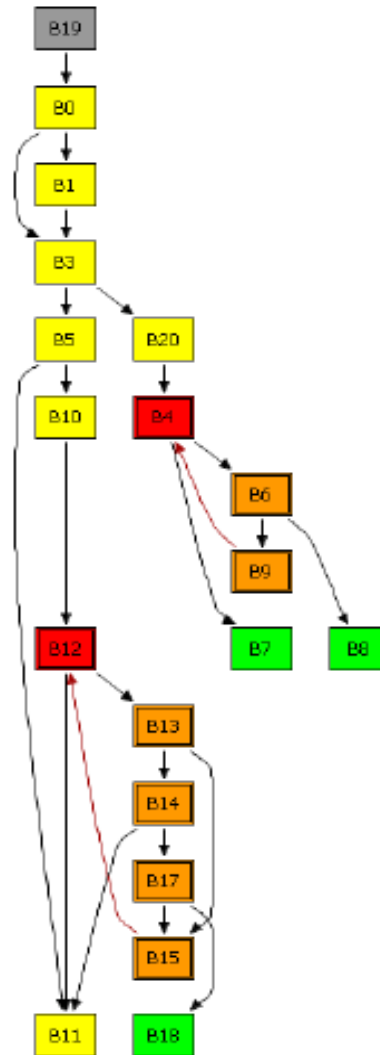
CFG 알고리즘?

- **BFS(Breath First Search) Positioning Algorithm**
- **Loop Positioning Algorithm**
- **Hierarchical Positioning Algorithm**

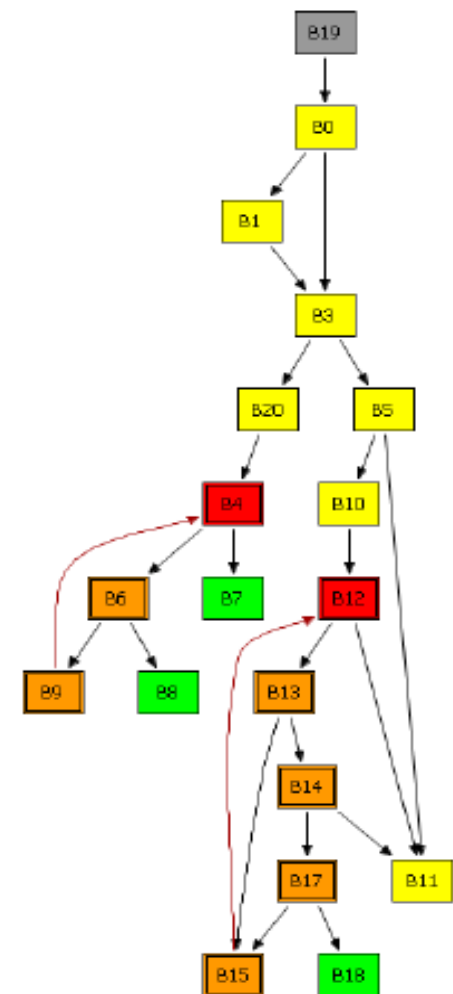
BFS algorithm



Loop algorithm



Hierarchical algorithm



BFS(Breath First Search) Positioning Algorithm

The algorithm is guaranteed to reach every node of the graph and has a runtime complexity of $O(n)$.

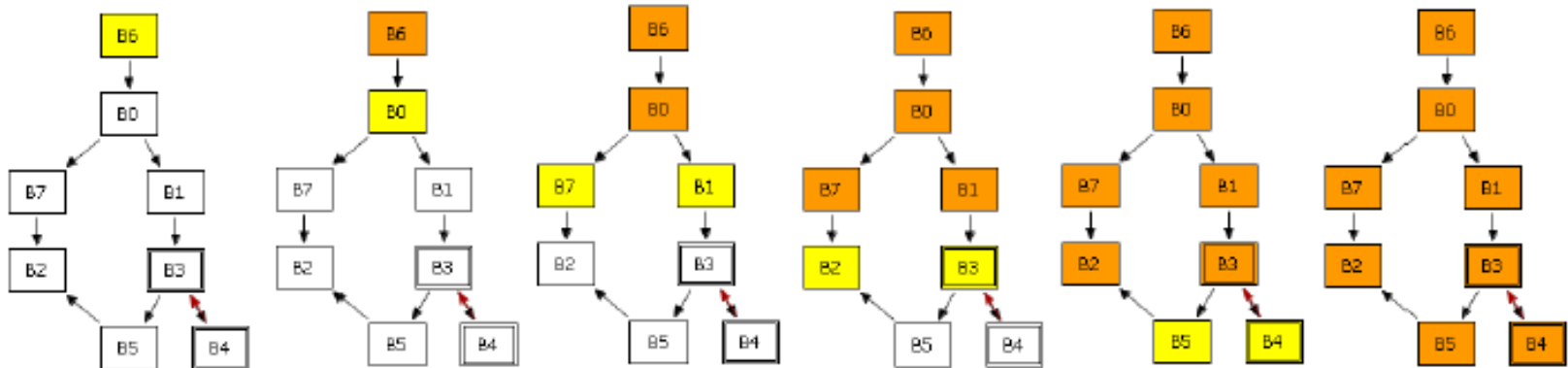
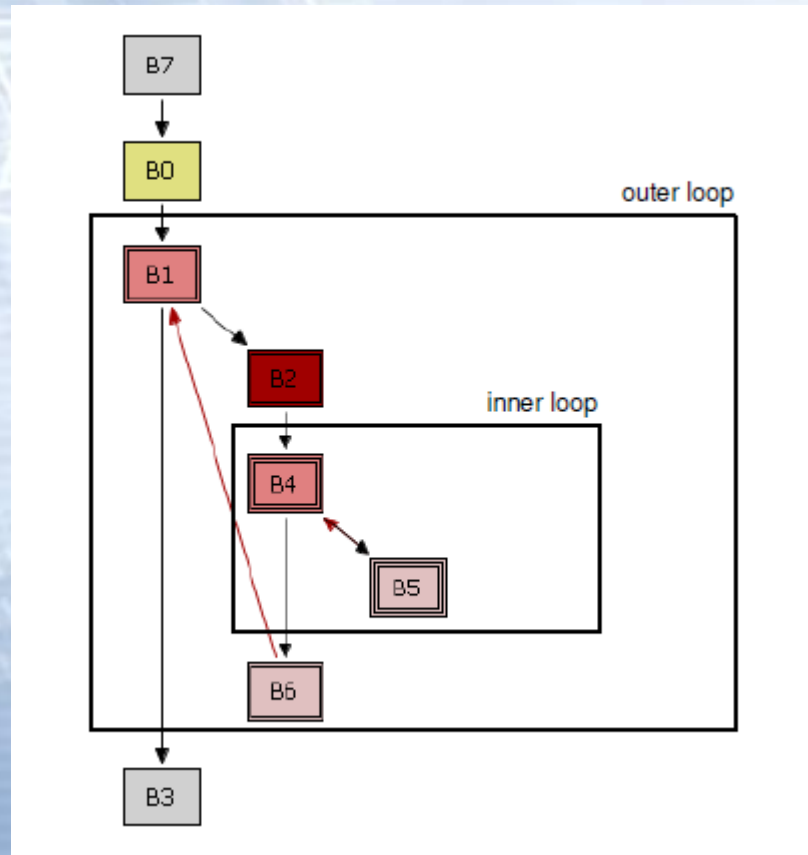


Figure 5.1: Breath first search on the example method.

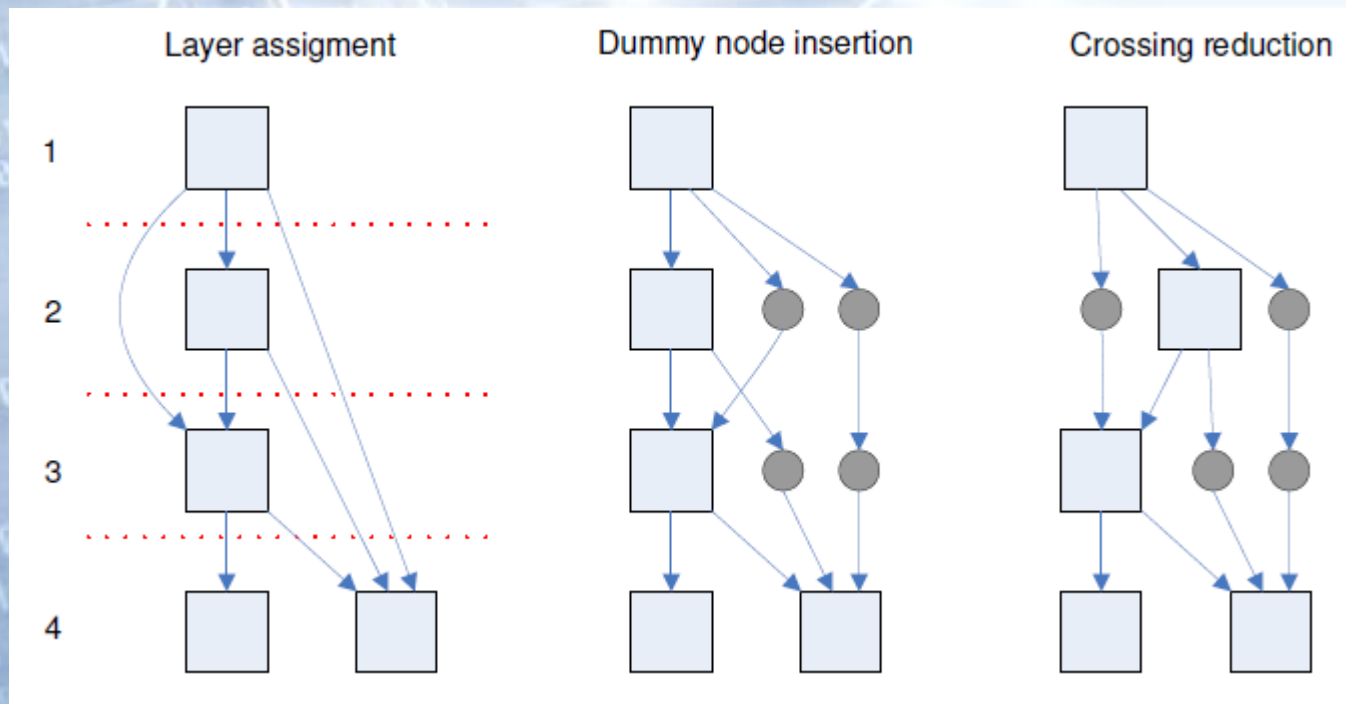
Loop Positioning Algorithm

In contrast to the previous algorithm, the loop position algorithm is designed for the specific case of displaying control flow graphs.

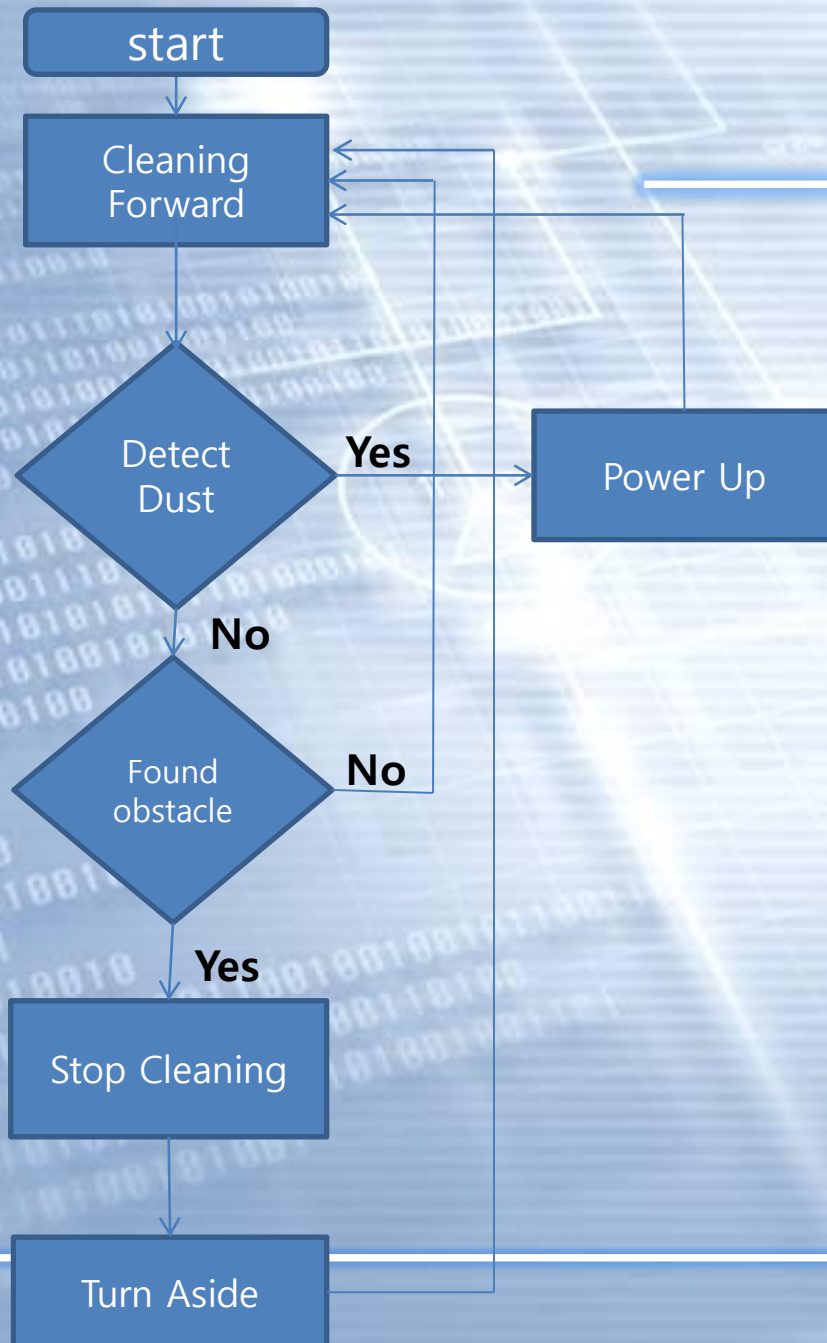


Hierarchical Positioning Algorithm





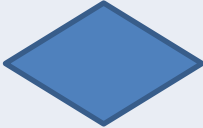
This is a common algorithm often used to calculate positionings for directed graphs



RVC Flow Chart



Control Flow Graph

DATA 정의	
타입	정의
 (실선)	DATA Flow
 (점선)	Control Flow
	DATA 저장
	DATA 처리
	분기문(if,of) 처리

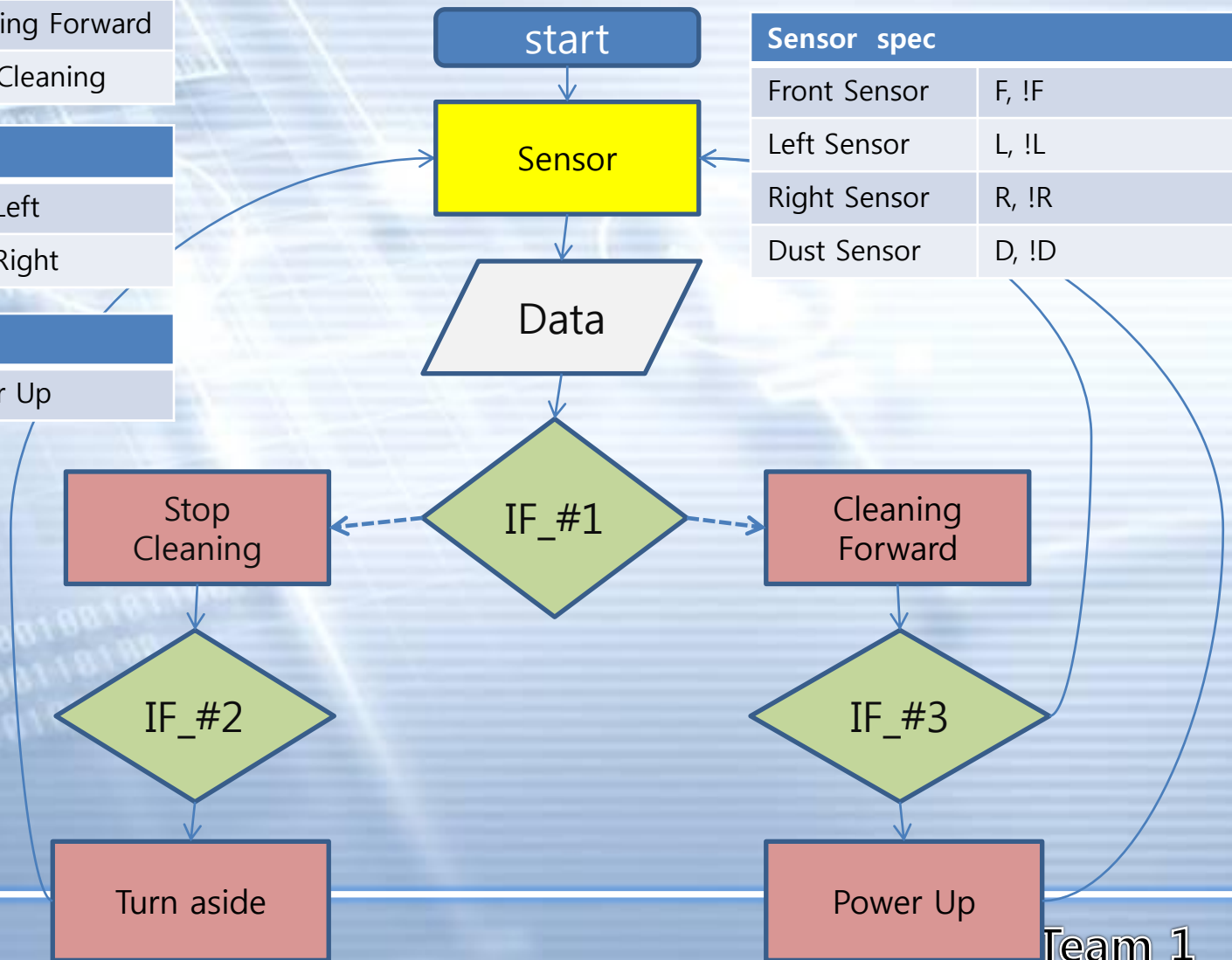
Control Flow Graph

If_#1 spec	
F	Cleaning Forward
!F	Stop Cleaning

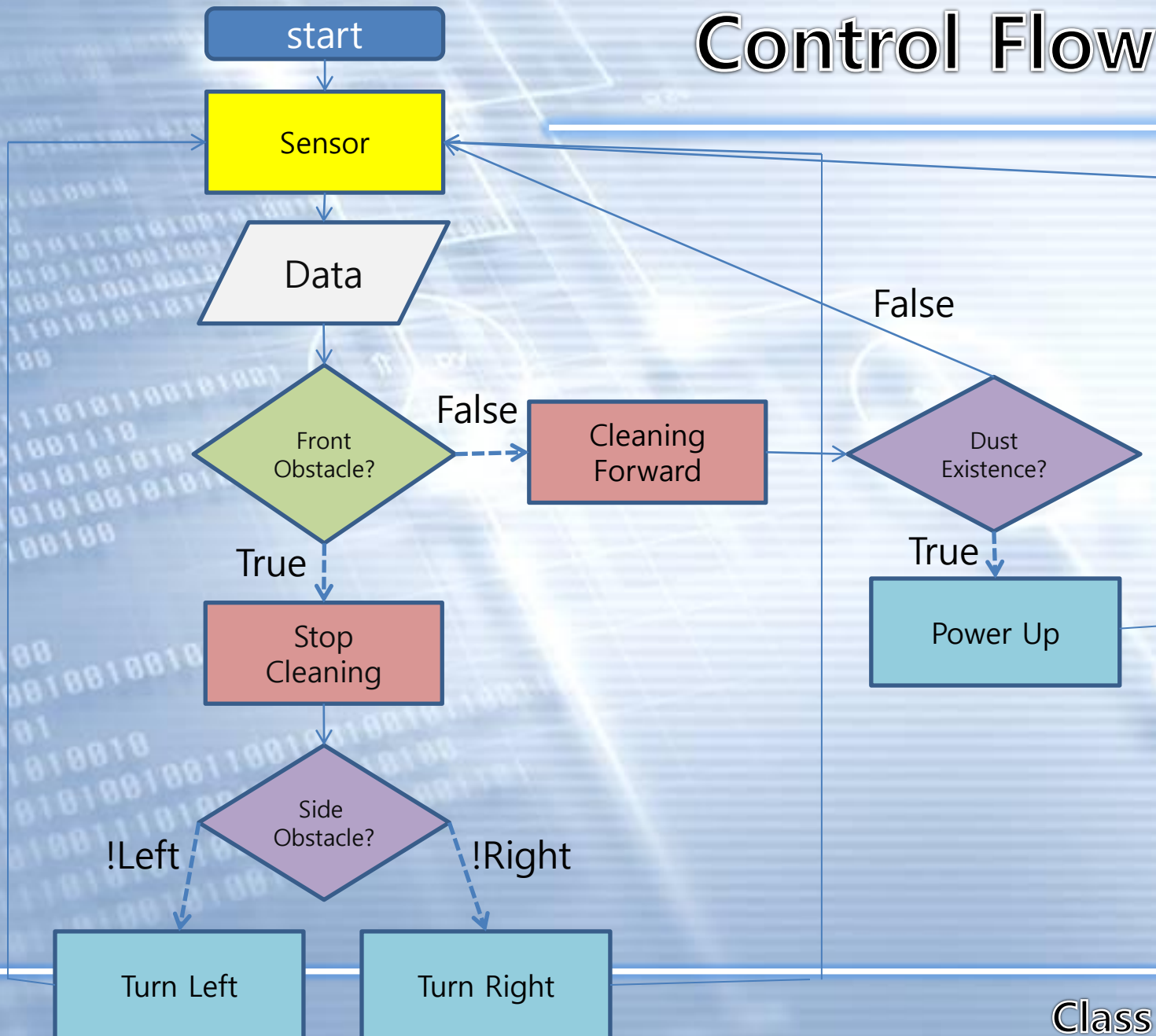
If_#2 spec	
F && !L && R	Turn Left
F && !R && L	Turn Right

If_#3 spec	
D	Power Up

Sensor spec	
Front Sensor	F, !F
Left Sensor	L, !L
Right Sensor	R, !R
Dust Sensor	D, !D



Control Flow Graph



Q & A

