

Structured DESIGN

Network Printer System

컴퓨터 공학부

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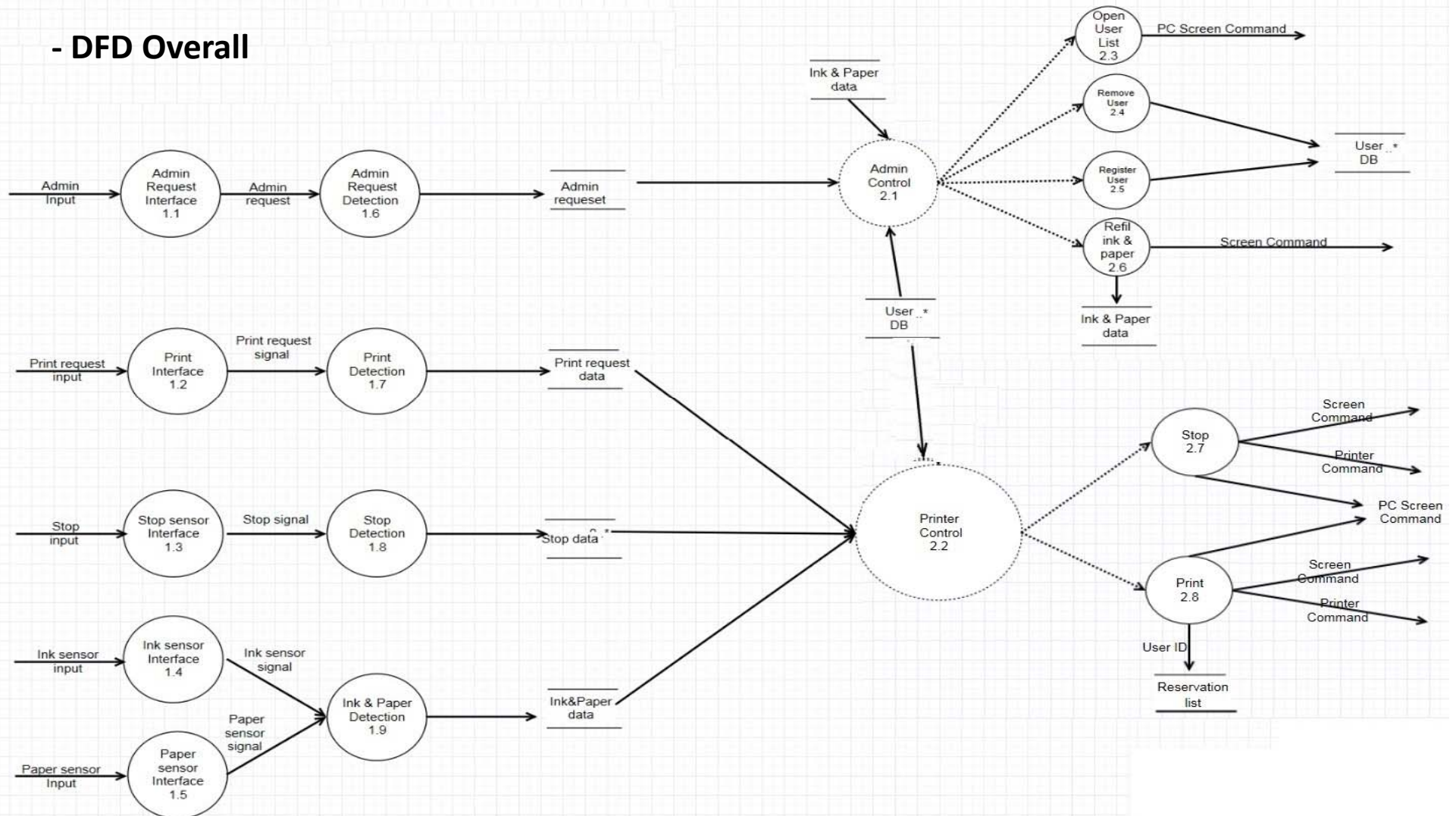
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1. Explanation

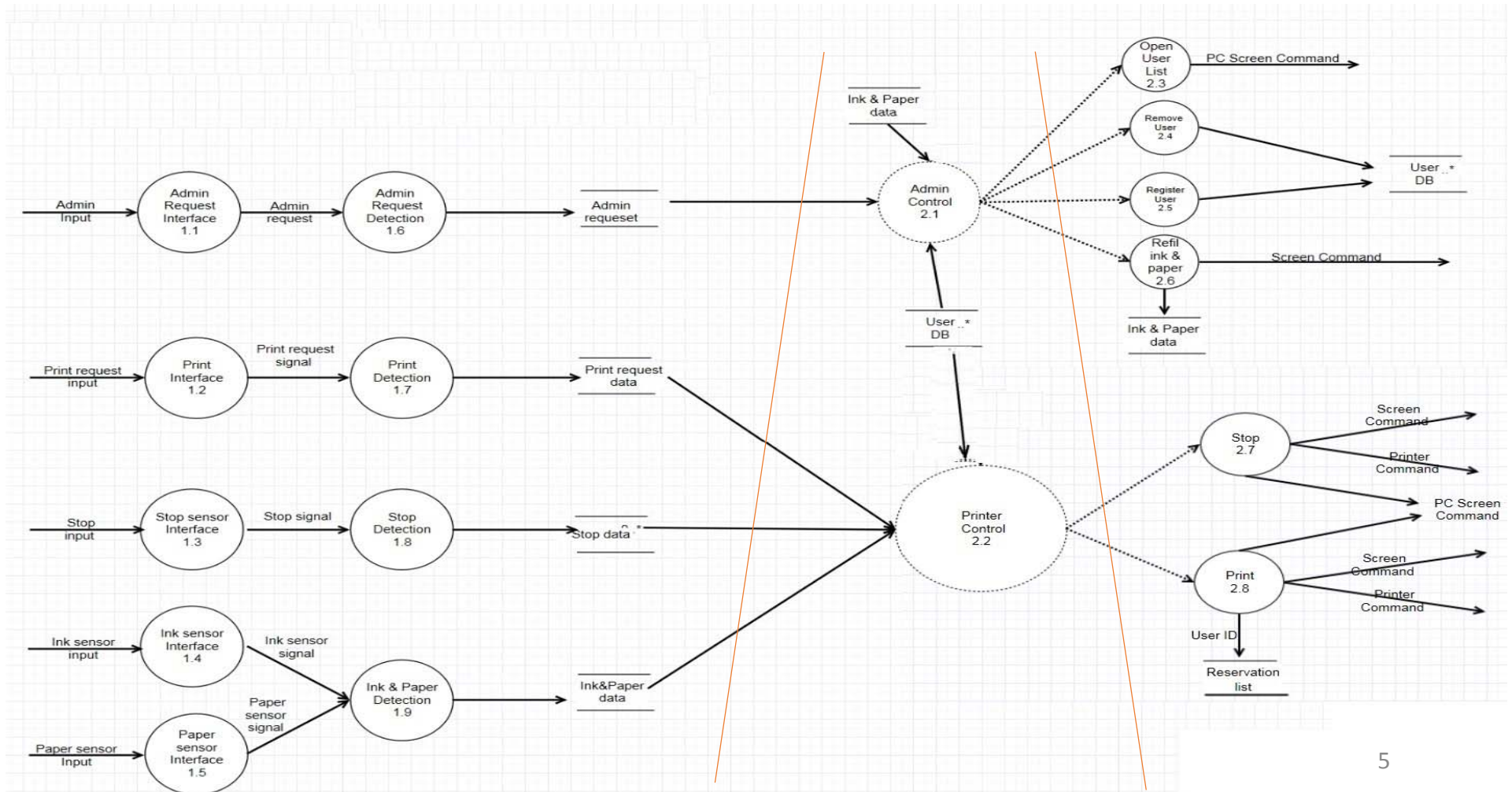
1. Explanation

- DFD Overall



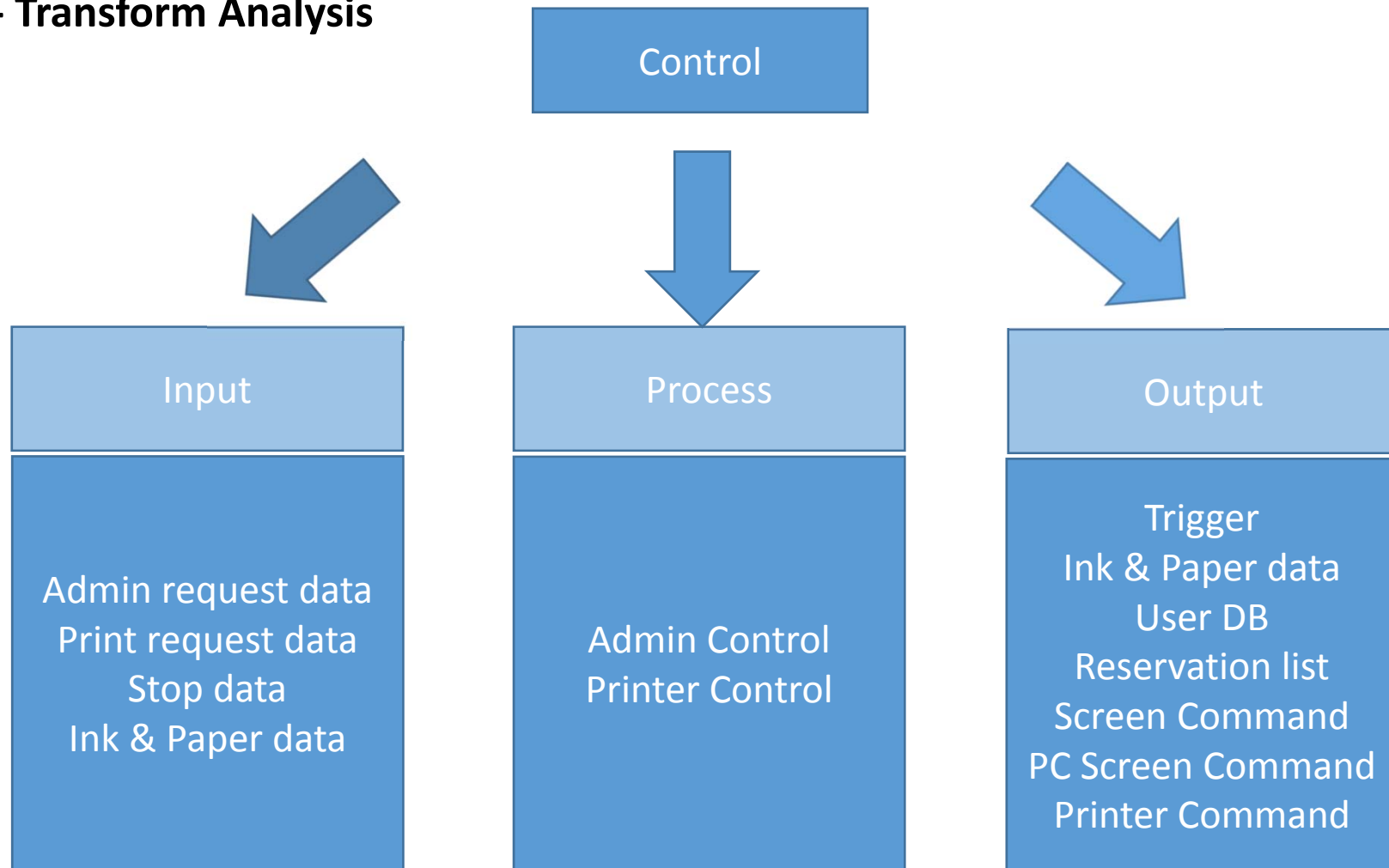
1. Explanation

- Transform Analysis



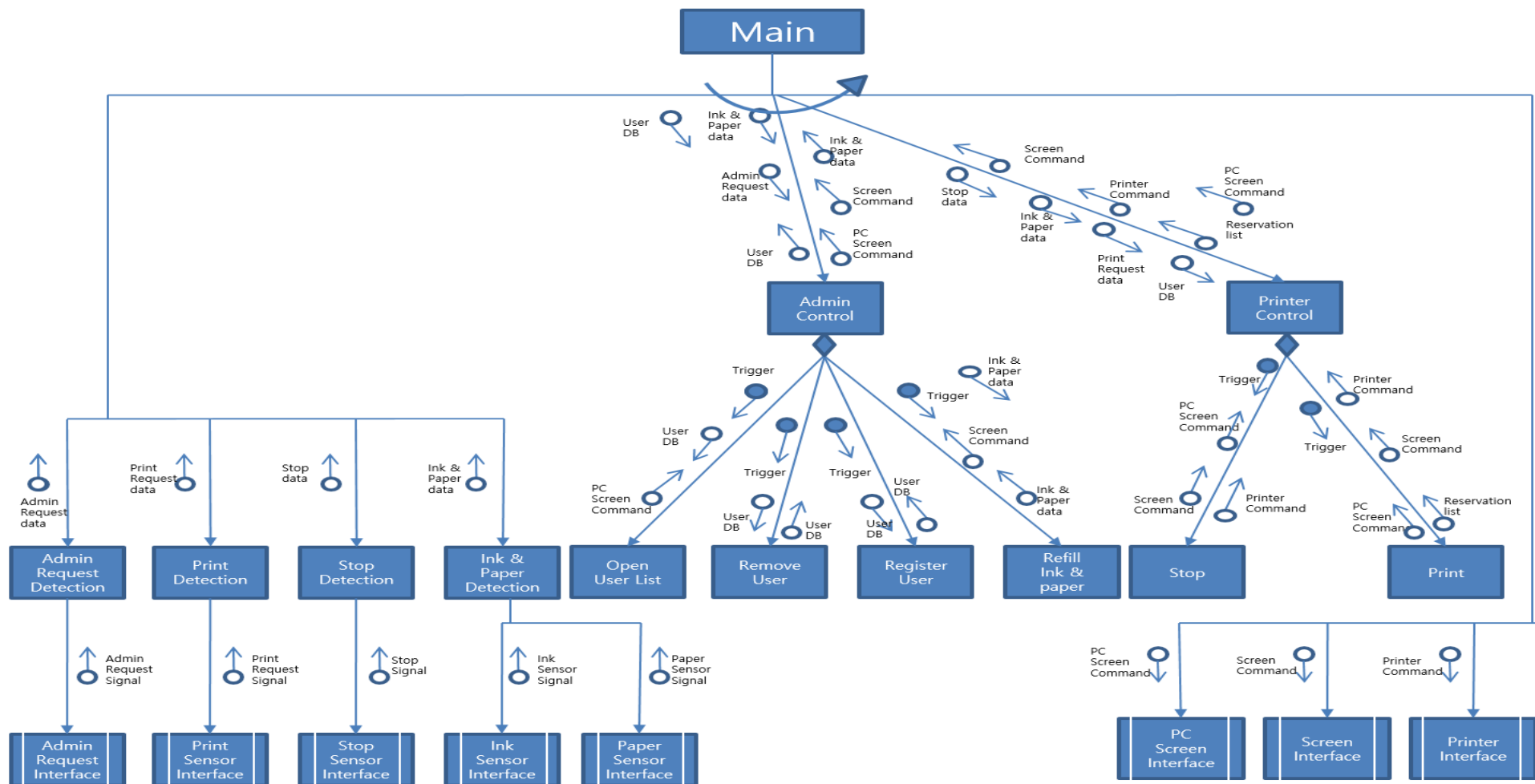
1. Explanation

- Transform Analysis



1. Explanation

- Advanced



2. Features to tested/ not tested

2-1. Features to be tested

Process in SRA : 각 프로세스가 가지고 있는 요구사항을 만족하는 지를 test한다.

ID	Name	Description
2.1	Admin Control	Admin Request data를 분석해서 작동할 Process를 선택한다.
2.2	Printer Control	Print Request data를 분석해서 작동할 Process를 선택한다.
2.3	Open User List	Admin_Request_data가 Admin Show UserList일 때 UserDB에 등록된 id들을 출력해준다.
2.4	Remove User	Admin Request data가 Del User (ID)일시 현재 User List에 있는 ID를 삭제한다.
2.5	Register User	Admin Request data가 Reg User (ID)일시 현재 User List에 있는 ID를 등록한다.
2.6	Refill Ink & Paper	Admin Request data가 Admin (Ink or Paper) (Refill amount) 일시 A4 신호 일시는 종이를 Refill amount 만큼 충전하고 Ink 신호 일시는 잉크를 Refill amount 만큼 충전한다.
2.7	Stop	Stop data를 분석해서 현재 상태를 계산하는 Process로 Print 프로세스를 중지시킨다.
2.8	Print	Print Request data를 분석해서 유저의 아이디, 유저가 선택할 파일, 복사 파일을 만들어서 저장한다.

2-2 Feature not to be tested

Process in SRA : 외부 장치 드라이버, 단순 데이터 전달 프로세스 등은 test에서 제외한다

ID	Name	Description
1.1	Admin Request Interface	H/W에서 입력된 Admin Input을 signal로 변환하는 Process
1.2	Print Interface	H/W에서 입력된 Print Input을 Print request signal로 변환하는 Process
1.3	Stop Sensor Interface	H/W에서 입력된 Stop Input을 Stop signal로 변환하는 Process
1.4	Ink Sensor Interface	H/W의 Ink Sensor로 감지된 양을 signal로 변환하는 Process
1.5	Paper Sensor Interface	H/W의 Paper Sensor로 감지된 양을 signal로 변환하는 Process
1.6	Admin Request Detection	Admin Interface에서 온 signal을 Admin Request data로 변환해주는 Process
1.7	Print Detection	Print Interface에서 온 signal을 Print Request data로 변환해주는 프로그램
1.8	Stop Detection	Stop Interface로부터 들어온 signal을 Stop data로 변환하는 Process
1.9	Ink & Paper Detection	Ink & Paper Interface로 부터 들어온 signal을 각각의 data인 Ink & Paper data로 변환해주는 Process

3. Unit Test Plan

3. Unit Test Plan

Approach

네트워크 프린터 시스템(NPS : Network Printer System)의 Program source code 및 Unit test를 위한 test code는 Cygwin+vi+gcc환경에서 이루어지며, Program source code/test code의 변경 및 수정사항은 지속적으로 통합하여서 test하며 각 모듈의 Unit test를 마무리 짓는다.

Item pass/fail criteria

Function test pass/fail criteria : 각 모듈은 SRA의 요구사항을 모두 만족하고 원하는 값이 나왔을 시 pass이며 요구사항과 원하지 않은 예외가 발생할 시 Fail이다.

3. Unit Test Plan

-Test identification & Test case specification(12/13(1/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.1_000	2.1 Admin Control	Admin_Request_data input :	Open_UserList() 실행
		Admin Show UserList UserDB input:{'\0'}	
		ink_paper_data input :	
		{0,0}	
TEAM2_NPS_2.1_001	2.1 Admin Control	Admin_Request_data input :	Remove_User() 실행
		Admin Del userA UserDB input:{'\0'}	
		ink_paper_data input :	
		{0,0}	
TEAM2_NPS_2.1_002	2.1 Admin Control	Admin_Request_data input :	Remove_User() 실행
		Admin Del userA UserDB input:{"userA"}	
		ink_paper_data input :	
		{0,0}	
TEAM2_NPS_2.1_003	2.1 Admin Control	Admin_Request_data input :	Register_User() 실행
		Admin Reg abcde UserDB input:{'\0'}	
		ink_paper_data input :	
		{0,0}	

3. Unit Test Plan

-Test identification & Test case specification(12/13(2/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.1_004	2.1 Admin Control	Admin_Request_data input :	Register_User() 실행
		Admin Reg abcde	
		UserDB input:{"abcde"}	
		ink_paper_data input :	
		{0,0}	
TEAM2_NPS_2.1_005	2.1 Admin Control	Admin_Request_data input :	Refill_ink_paper()실행
		Admin A4 100	
		UserDB input:{"\0"}	
		ink_paper_data input :	
		{0,0}	
TEAM2_NPS_2.1_006	2.1 Admin Control	Admin_Request_data input :	Refill_ink_paper()실행
		Admin ink 3000	
		UserDB input:{"\0"}	
		ink_paper_data input :	
		{0,0}	
TEAM2_NPS_2.1_007	2.1 Admin Control	Admin_Request_data input :	명령어 재입력 요구
		AdminOpenUserList	
		UserDB input:{"\0"}	
		ink_paper_data input :	
		{0,0}	

3. Unit Test Plan

-Test identification & Test case specification(12/13(3/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.2_000	2.2 Print Control	Print Request data : UserA abc.txt Ink & Paper data = 3000, 15	Count_Char(abc.txt)실행(출력할 함수의 잉크수) Identify_User(UserA)실행 Count_Low(abc.txt)행의 개수를 출력함수 실행 Compare_RealInk()실행
TEAM2_NPS_2.2_001	2.2 Print Control	Print Request data : UserD(not exist) abc.txt Ink & Paper data = 3000, 15	Count_Char(abc.txt)실행(출력할 함수의 잉크수) Identify_User(UserD)실행 Count_Low(abc.txt)행의 개수를 출력함수 실행 Compare_RealInk()실행
TEAM2_NPS_2.2_002	2.2 Print Control	Print Request data : abc.txt UserA Ink & Paper data = 3000, 15	두개의 변수의 위치가 변하여 실행하지 않음
TEAM2_NPS_2.2_003	2.2 Print Control	Print Request data : UserA abc Ink & Paper data = 3000, 15	파일 이름의 형태가 .txt형식이 아니라서 실행 하지 않음
TEAM2_NPS_2.2_004	2.2 Print Control	Print Request data : UserD abc.txt Ink & Paper data = 3000, 15	Count_Char(abc.txt)실행(출력할 함수의 잉크수) Identify_User(UserD)실행 Count_Low(abc.txt)행의 개수를 출력함수 실행 Compare_RealInk()실행 Compare_RealPaper()실행
TEAM2_NPS_2.2_005	2.2 Print Control	Print Request data : UserH nts.txt Ink & Paper data = 3000, 15	Count_Char(nts.txt)실행(출력할 함수의 잉크수) Identify_User(UserH)실행 Count_Low(nts.txt)행의 개수를 출력함수 실행 Compare_RealInk()실행 Compare_RealPaper()실행
TEAM2_NPS_2.2_006	2.2 Print Control	Print Request data : yunhoo asdf.txt(not exist User) Ink & Paper data = 3000, 15	Count_Char(asdf.txt)실행(출력할 함수의 잉크수) Identify_User(yunhoo)실행 Count_Low(asdf.txt)행의 개수를 출력함수 실행 Compare_RealInk()실행
TEAM2_NPS_2.2_007	2.2 Print Control	Print Request data : !!!! aaa.txt Ink & Paper data = 3000, 15	User ID형식이 특수문자형식이므로 실행하지 않음

3. Unit Test Plan

-Test identification(4/13)

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.3_000	2.3 Open User List	UserDB input :	등록된 유저가 없다.
		{'\0'}	
TEAM2_NPS_2.3_001	2.3 Open User List	UserDB input :	abc
		{abc}	
TEAM2_NPS_2.3_002	2.3 Open User List	UserDB input :	a b c
		{a,b,c}	
TEAM2_NPS_2.3_003	2.3 Open User List	UserDB input :	aaaaaaaaa bbbbbbbbbb cccccccc
		{aaaaaaaaaaa,bbbbbbbbbb,cccccccc}	
TEAM2_NPS_2.3_004	2.3 Open User List	UserDB input :	a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z
		{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z}	

3. Unit Test Plan

-Test identification & Test case specification(12/13(5/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.4_000	2.4 Remove User	UserDB input :	등록된 유저가 아님
		{'\0'}	
		id input :	
		userA	
TEAM2_NPS_2.4_001	2.4 Remove User	UserDB input :	등록된 유저가 아님
		{userA}	
		id input :userA	
TEAM2_NPS_2.4_002	2.4 Remove User	UserDB input :	userA userC
		{userA,userB,userC}	
		id input :userB	

3. Unit Test Plan

-Test identification(6/13)

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.4_003	2.4 Remove User	UserDB input :	userA userB userC
		{userA,userB,userC}	
		id input :	
		userABC	
TEAM2_NPS_2.4_004	2.4 Remove User	UserDB input : {'\0'}	등록된 유저 없다.
		id input :(공백)	
TEAM2_NPS_2.4_005	2.4 Remove User	UserDB input :{1,2,3,4,5,6,7,8,9,10}	2
		id input : 1 10
TEAM2_NPS_2.4_006	2.4 Remove User	UserDB input : {1,2,3,4,5,6,7,8,9,10}	1
		id input : 1(공백)	... 10

3. Unit Test Plan

-Test identification & Test case specification(12/13(7/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.5_000	2.5 Register User	UserDB input : {'\0'}	userA 등록
		id input : userA	
TEAM2_NPS_2.5_001	2.5 Register User	UserDB input : {userA}	중복 id 불가
		id input : {userA}	
TEAM2_NPS_2.5_002	2.5 Register User	UserDB input : {a,b,c,d,e,f}	a, b, c, d, e, f 등록
		id input : {a b c d e f}	
TEAM2_NPS_2.5_003	2.5 Register User	UserDB input : {'\0'}	id의 Max == 9
		id input :aaaaaaaaaaaaaaaaaaaaaa	
TEAM2_NPS_2.5_004	2.5 Register User	UserDB input : {'\0'}	id의 Max == 9
		id input : aaaaaaaaaaaaaaaaaaaaaaa	
		bbbbbbbbbbbbbbbbbbbbbbbbbb	
		cccccccccccccccccccccccc	
TEAM2_NPS_2.5_005	2.5 Register User	UserDB input : {'\0'}	a,b,c 등록
		id input : a,b,c,d,e,f	

3. Unit Test Plan

-Test identification & Test case specification(12/13(8/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.6_000	2.6 Refill ink & paper	ink_paper_data input :	0.0
		0,0 (앞이 용지 상태)	
		refill input :	
		0,0 (앞이 용지의 refill 양)	
TEAM2_NPS_2.6_001	2.6 Refill ink & paper	ink_paper_data input :	100.0
		100,0	
		refill input : 0,0	
TEAM2_NPS_2.6_002	2.6 Refill ink & paper	ink_paper_data input : 100,0	paper의 Max == 100
		refill input : 100,0	
TEAM2_NPS_2.6_003	2.6 Refill ink & paper	ink_paper_data input :	paper의 Max == 100
		1,003,000	
		refill input : 1.00 ,0	

3. Unit Test Plan

-Test identification & Test case specification(12/13(9/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.6_004	2.6 Refill ink & paper	ink_paper_data input :	0.3000
		0,3000	
		refill input : 0,0	
TEAM2_NPS_2.6_005	2.6 Refill ink & paper	ink_paper_data input :	ink의 Max == 3000
		0,3000	
		refill input : 0,1000	
TEAM2_NPS_2.6_006	2.6 Refill ink & paper	ink_paper_data input : 0,3000	ink의 Max == 3000
		refill input : 0, 0.0001	
TEAM2_NPS_2.6_007	2.6 Refill ink & paper	ink_paper_data input : 0,0	Refill amount는 양의 정수
		refill input :-1,0	
TEAM2_NPS_2.6_008	2.6 Refill ink & paper	ink_paper_data input :100,0	Refill amount는 양의 정수
		refill input :-100 ,0	

3. Unit Test Plan

-Test identification(10/13)

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.7_000	2.7 Stop	INDB data : True	Print(UserName,FileName)실행 Stop_signal = false; 복사파일 이름 년도월일시간분.txt
		INKEPT : True	
		PPEPT : True	
		CLIKSTB = FALSE	
TEAM2_NPS_2.7_001	2.7 Stop	INDB data : False	프린터함수가 실행되지않음 Stop_signal = True;
		INKEPT : True	
		PPEPT : True	
		CLIKSTB = FALSE	
TEAM2_NPS_2.7_002	2.7 Stop	INDB data : True	프린터함수가 실행되지않음 Stop_signal = True;
		INKEPT : False	
		PPEPT : True	
		CLIKSTB = FALSE	
TEAM2_NPS_2.7_003	2.7 Stop	INDB data : True	프린터함수가 실행되지않음 Stop_signal = True;
		INKEPT : True	
		PPEPT : False	
		CLIKSTB = FALSE	

3. Unit Test Plan

-Test identification & Test case specification(12/13(11/13))

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.7_004	2.7 Stop	INDB data : True	프린터함수가 실행되지않음 Stop_sigal = True;
		INKEPT : True	
		PPEPT : True	
		CLIKSTB = True	
TEAM2_NPS_2.7_005	2.7 Stop	INDB data : FALSE	프린터함수가 실행되지않음 Stop_sigal = True;
		INKEPT : FALSE	
		PPEPT : FALSE	
		CLIKSTB = FALSE	
TEAM2_NPS_2.7_006	2.7 Stop	INDB data : 111	프린터함수가 실행되지않음 Stop_sigal = True;
		INKEPT : 33	
		PPEPT : True	
		CLIKSTB = FALSE	

3. Unit Test Plan

-Test identification & Test case specification(12/13)

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.8_000	2.8 Print	INDB data : True	Print(UserName,FileName)실행 복사파일 이름 년도월일시간분.txt
		INKEPT : True	
		PPEPT : True	
		CLIKSTB = FALSE	
TEAM2_NPS_2.8_001	2.8 Print	INDB data : False	프린터함수가 실행되지않음 Stop_signal = True;
		INKEPT : True	
		PPEPT : True	
		CLIKSTB = FALSE	
TEAM2_NPS_2.8_002	2.8 Print	INDB data : True	프린터함수가 실행되지않음 Stop_signal = True;
		INKEPT : False	
		PPEPT : True	
		CLIKSTB = FALSE	
TEAM2_NPS_2.8_003	2.8 Print	INDB data : True	프린터함수가 실행되지않음 Stop_signal = True;
		INKEPT : True	
		PPEPT : False	
		CLIKSTB = FALSE	

3. Unit Test Plan

-Test identification & Test case specification(13/13)

Identifier	Feature	Valid/Invalid value	Output Specification
TEAM2_NPS_2.8_004	2.8 Print	INDB data : True	프린터함수가 실행되지않음 Stop_sihal = True;
		INKEPT : True	
		PPEPT : True	
		CLIKSTB = True	
TEAM2_NPS_2.8_005	2.8 Print	INDB data : FALSE	프린터함수가 실행되지않음 Stop_sihal = True;
		INKEPT : FALSE	
		PPEPT : FALSE	
		CLIKSTB = FALSE	
TEAM2_NPS_2.8_006	2.8 Print	INDB data : FALSE	프린터함수가 실행되지않음 Stop_sihal = True;
		INKEPT : FALSE	
		PPEPT : FALSE	
		CLIKSTB = FALSE	
TEAM2_NPS_2.8_007	2.8 Print	INDB data : 111	아무 함수도 실행되지 않음
		INKEPT : 33	
		PPEPT : True	
		CLIKSTB = FALSE	

4. Unit Test Result

4. Unit Test Result

<i>Running Test</i> Admin Control	
TEAM2_NPS_2.1_000	Passed
TEAM2_NPS_2.1_001	Passed
TEAM2_NPS_2.1_002	Passed
TEAM2_NPS_2.1_003	Passed
TEAM2_NPS_2.1_004	Passed
TEAM2_NPS_2.1_005	Passed
TEAM2_NPS_2.1_006	Passed
TEAM2_NPS_2.1_007	Passed

4. Unit Test Result

<i>Running Test</i> Printer Control	
TEAM2_NPS_2.2_000	Passed
TEAM2_NPS_2.2_001	Passed
TEAM2_NPS_2.2_002	Passed
TEAM2_NPS_2.2_003	Passed
TEAM2_NPS_2.2_004	Passed
TEAM2_NPS_2.2_005	Passed
TEAM2_NPS_2.2_006	Passed
TEAM2_NPS_2.2_007	Passed

4. Unit Test Result

<i>Running Test</i> Open User List	
TEAM2_NPS_2.3_000	Passed
TEAM2_NPS_2.3_001	Passed
TEAM2_NPS_2.3_002	Passed
TEAM2_NPS_2.3_003	Passed
TEAM2_NPS_2.3_004	Passed

4. Unit Test Result

<i>Running Test</i> Remove User	
TEAM2_NPS_2.4_000	Passed
TEAM2_NPS_2.4_001	Passed
TEAM2_NPS_2.4_002	Passed
TEAM2_NPS_2.4_003	Passed
TEAM2_NPS_2.4_004	Passed
TEAM2_NPS_2.4_005	Passed
TEAM2_NPS_2.4_006	Passed

4. Unit Test Result

<i>Running Test</i> Register User	
TEAM2_NPS_2.5_000	Passed
TEAM2_NPS_2.5_001	Passed
TEAM2_NPS_2.5_002	Passed
TEAM2_NPS_2.5_003	Passed
TEAM2_NPS_2.5_004	Passed
TEAM2_NPS_2.5_005	Passed

4. Unit Test Result

<i>Running Test</i> Refill Ink & Paper	
TEAM2_NPS_2.6_000	Passed
TEAM2_NPS_2.6_001	Passed
TEAM2_NPS_2.6_002	Passed
TEAM2_NPS_2.6_003	Passed
TEAM2_NPS_2.6_004	Passed
TEAM2_NPS_2.6_005	Passed
TEAM2_NPS_2.6_006	Passed
TEAM2_NPS_2.6_007	Passed
TEAM2_NPS_2.6_008	Passed

4. Unit Test Result

<i>Running Test</i> Stop	
TEAM2_NPS_2.7_000	Passed
TEAM2_NPS_2.7_001	Passed
TEAM2_NPS_2.7_002	Passed
TEAM2_NPS_2.7_003	Passed
TEAM2_NPS_2.7_004	Passed
TEAM2_NPS_2.7_005	Passed
TEAM2_NPS_2.7_006	Passed

4. Unit Test Result

<i>Running Test</i> Print	
TEAM2_NPS_2.8_000	Passed
TEAM2_NPS_2.8_001	Passed
TEAM2_NPS_2.8_002	Passed
TEAM2_NPS_2.8_003	Passed
TEAM2_NPS_2.8_004	Passed
TEAM2_NPS_2.8_005	Passed
TEAM2_NPS_2.8_006	Passed
TEAM2_NPS_2.8_007	Passed

Total test : 69

Passed : 70 Failed : 0

4. Unit Test Result

Total test : 59 Passed : 59 Failed : 0

Testing unit	Passed	Failed
Admin Control(8)	8	0
Printer Control(8)	8	0
Open User List(5)	5	0
Remove User(7)	7	0
Regist User(6)	6	0
Refill Ink & Paper(9)	9	0
Print(7)	7	0
Stop(8)	8	0

Q & A

THANK YOU!
