System Programming Report

Assignment 2-1 – ls basics

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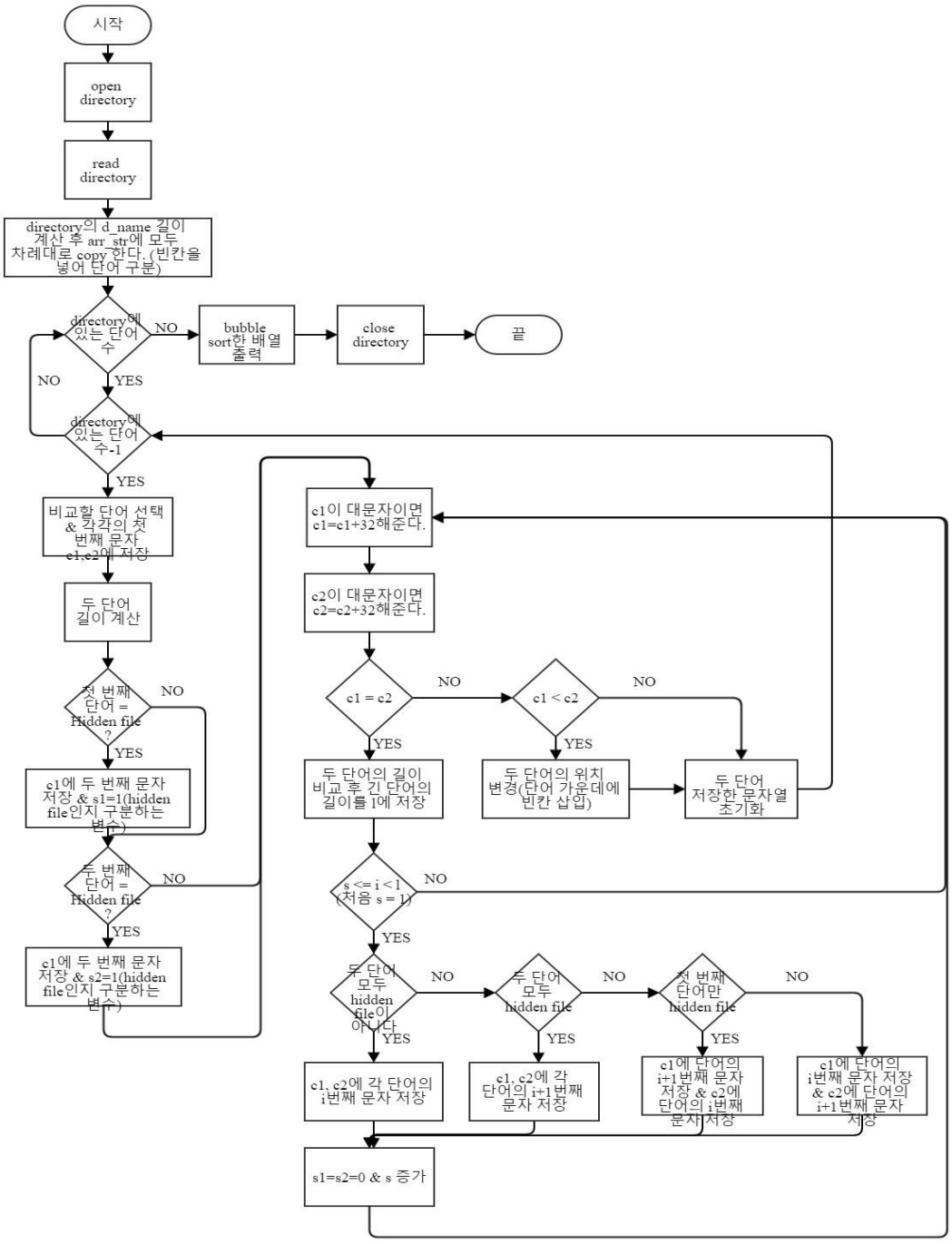
◆ **Introduction**

이번 과제는 Simple ls를 구현하고 코드와 결과화면을 보는 것이다. 이때 파일과 폴더의 이름을 오름차순으로 정렬하여 출력하고 히든파일(startion with .)을 포함해야 한다. 현재폴더(.)와 상위폴더(..)가 먼저 출력되고 다음으로 정렬된 파일과 폴더가 아스키코드 순으로 출력된다. 단 대문자는 소문자의 아스키코드 값으로 비교한다. 히든파일의 경우 .을 제외하고 정렬하도록 한다.

◆ **Flowchart**



◆ **Pseudo code**

```
open directory
while(read directory){
        while(calculate d_name's length until d_name's character isn't NULL)
            increase variable indicated d_name's length
        for(i =0; i < d_name's length; i++)
            store directory's name in array one by one
        store blank in array
        count word
        overall length is overall length plus d_name's length plus 1
    }
for(k1=0; k1<word's count; k1++){
    initialize c and j(c and j are starting points which is words to compare)
    for(k2=0;k2<word's count-1;k2++){
        initialize s1 and s2(variable to check whether hidden file or not)
        for(count=0;count<2;count++)       // find words to compare
        {
            for(i=j,s=0;i<overall length;i++,s++){
                if array's character is blank
                    exit loop
                if array's character is character{
                    if count is 0{
                        c1 is first word's first character
                        w1 is first word stored in array
                    }
                    if count is 1{
```

```
                                        c2 is second word's first character
                                        w2 is second word stored in array
                                }
                        }
                }
                j is i plus 1
}
initialize l1 and l2 (l1 is first word's length & l2 is second word's length
while(calculate first word's length until array is 0)
        increase variable indicated first word's length
while(calculate second word's length until array is 0)
        increase variable indicated second word's length
if first word's first character is '.' {
        if first word's length is 2{
                if first word's second character is '.'{
                        c1 is first word's second character
                        s1 is 1
                }
        }
        if first word's length isn't 2{
                c1 is first word's second character
                s1 is 1
        }
}
if second word's first character is '.'{
        if second word's length is 2{
```

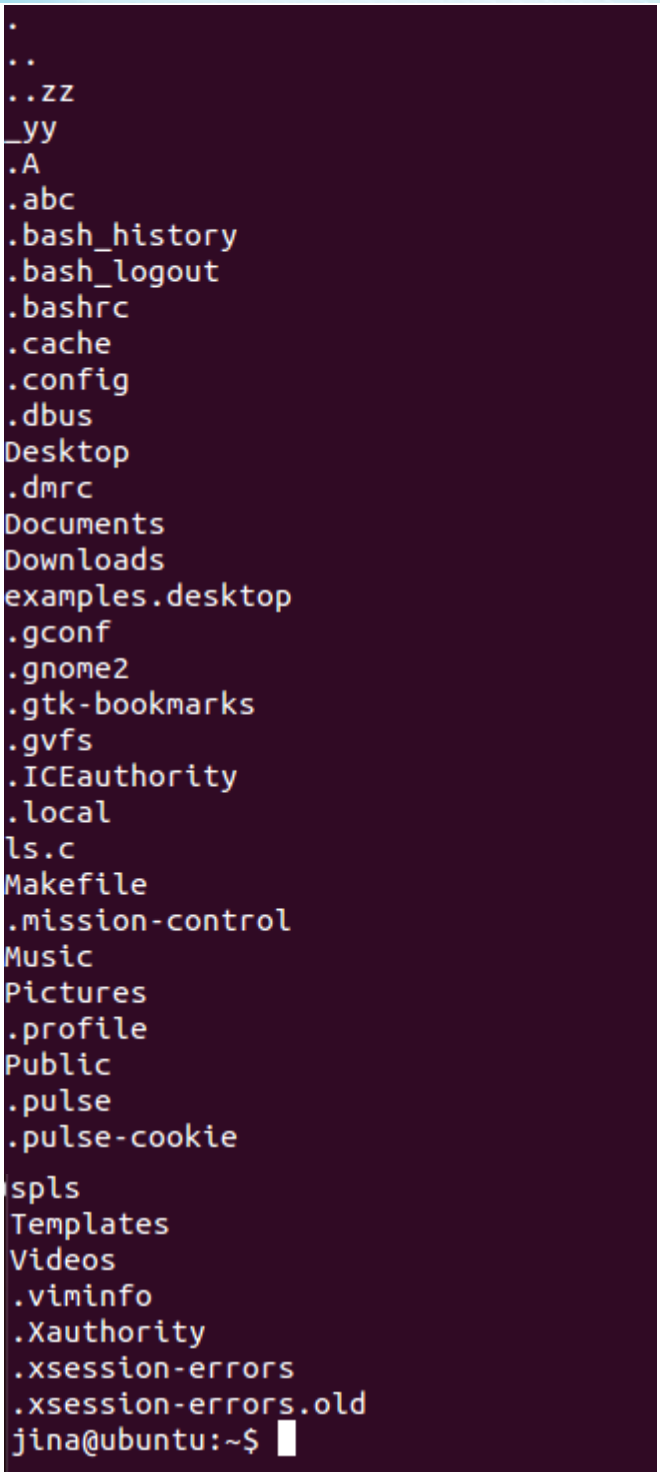
```
                    if(second word's second character is '.'){
                        c2 is second word's second character
                        s2 is 1
                    }
                }
                if second word's length isn't 2
                    c2 is second word's second character
                    s2 is 1
                }
}
initialize s(start point to compare words)
while(infinite loop){
                if c1 is capital letter
                    change capital letter to small letter
                if c2 is capital letter
                    change capital letter to small letter
                if c1 and c2 are different
                    exit infinite loop
                if c1 and c2 are same{
                    if first word's length is bigger than second word's length
                        l is first word's length
                    if second word's length is bigger than first word's length
                        l is second word's length
                    for(i=s;i<l;i++){
                        if first word and second word aren't hidden file{
                            c1 is first word's ith character
```

```
                    c2 is second word's ith character
                }
                if first word and second word are hidden file{
                    c1 is first word's (i+1)th character
                    c2 is second word's (i+1)th character
                }
                if first word is hidden file and second word isn't hidden file{
                    c1 is first word's (i+1)th character
                    c2 is second word's ith character
                }
                if first word is hidden file and second word isn't hidden file {
                    c1 is first word's ith character
                    c2 is second word's (i+1)th character
                }
                if c1 and c2 are different
                    exit loop
            }
            initialize s1 and s2(variables to check whether hidden file or not)
        }
        increase start point
    }
    if first word's character is bigger than second word's character{
        for(i=c+l2+1,s=0;i<=c+l1+l2;i++,s++)
            change first word's position at second word's position
        for(i=c,s=0;i<c+l2;i++,s++)
            change second word's position at first word's position
```

```
                store blank between words
                j is j minus first word's length plus 1
        }
        if first word's character is less than second word's character
                j is j minus second word's length plus 1
        c is j
        for(i=0;i<l1;i++)
                initialize first word
        for(i=0;i<l2;i++)
                initialize second word
    }
    }
    for(i=0;i<a_len;i++){
        if array's ith character is blank
                print space
        if array's ith character is character
                print array's ith character
    }
    close directory
```

◆ **Conclusion**

파일과 폴더의 이름을 오름차순으로 정렬하기 위해 여러 sort 중 bubble sort을 이용해 구현하였다. 이번 과제를 통해 directory을 열고 닫을 때 어떤 함수를 써야 하는지 알게 되었다. 또한 directory에 있는 파일과 폴더의 이름을 불러오는 방법, bubble sort가 어떤 식으로 작동되는지 자세히 알게 되었다. 매번 헷갈렸던 아스키코드 값을 다시 한번 알 수 있었다. 마지막으로 리눅스 상에서 사용한 명령어 ls가 어떤 식으로 구현되었는지 알게 되었다.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..
..zz
_yy
.A
.abc
.bash_history
.bash_logout
.bashrc
.cache
.config
.dbus
Desktop
.dmrc
Documents
Downloads
examples.desktop
.gconf
.gnome2
.gtk-bookmarks
.gvfs
.ICEauthority
.local
ls.c
Makefile
.mission-control
Music
Pictures
.profile
Public
.pulse
.pulse-cookie
spls
Templates
Videos
.viminfo
.Xauthority
.xsession-errors
.xsession-errors.old
jina@ubuntu:~$