



System Administration Practice Homework 2: Shell Programming

yench

Requirements

- 3-1: Filesystem Statistic (20%)
- 3-2: Dialog Browser (60%)
 - Make a web browser by using dialog
- Modify code by yourself at demo (20%)
- Please write the scripts in Bourne Shell (sh)
 - No score if you use csh, bash or other languages.
- Due: 2016/10/14 upload `${student_ID}.tar` on E3
- Demo at next week. Two day in 2016/10/17~21

3-1: Filesystem Statistic

```
$ wget https://github.com/Thomas-Tsai/partclone/archive/0.2.89.tar.gz -O - | tar jxf -
--2016-09-29 10:32:25-- https://github.com/Thomas-Tsai/partclone/archive/0.2.89.tar.gz
正在查找主機 github.com (github.com)... 192.30.253.113
正在連接 github.com (github.com)|192.30.253.113|:443... 連上了。
已送出 HTTP 要求，正在等候回應... 302 Found
位置: https://codeload.github.com/Thomas-Tsai/partclone/tar.gz/0.2.89 [跟隨至新的 URL]
--2016-09-29 10:32:26-- https://codeload.github.com/Thomas-Tsai/partclone/tar.gz/0.2.89
正在查找主機 codeload.github.com (codeload.github.com)... 192.30.253.120
正在連接 codeload.github.com (codeload.github.com)|192.30.253.120|:443... 連上了。
已送出 HTTP 要求，正在等候回應... 200 OK
長度: 1051296 (1.0M) [application/x-gzip]
Saving to: 'STDOUT'

-
100%[=====]

2016-09-29 10:32:30 (362 KB/s) - written to stdout [1051296/1051296]

$ cd partclone-0.2.89/
$ ../../sahw2-1.sh
1:402607 Makefile.in
2:312642 configure
3:173953 xfs_bmap.c
4:118770 ChangeLog
5:111736 extent-tree.c
Dir num: 24
File num:428
Total: 4992643
```

3-1: Filesystem Statistic - Requirement

- Inspect the current directory(“.”) and all sub-directory.
- Calculate the number of directories.
- Do not include ‘.’ and ‘..’
- Calculate the number of files.
- Calculate the sum of all file size.
- List the top 5 biggest files.
- Only consider the regular file. Do not count in the link, FIFO, block device... etc.

3-1: Filesystem Statistic - Requirement

- Use **one-line** command
- Only pipes are allowed.
- No temporary file or shell variables.
- No “&&” “||” “>” “>>” “<” “;” “&”, but you can use them in the awk command. Actually, you don't need them to finish this homework.
- Hint: ls(1) with -A and -R

3-1: Filesystem Statistic - Requirement

❑ Grade

- File is executable. (4%)
- List top 5 file size and name. (4%)
- Dir num is correct. (4%)
- File num is correct. (4%)
- Total size is correct. (4%)

3-2: Dialog browser



Dialog (1)

Dialog is a program that will let you to present a variety of questions or display messages using dialog boxes from a shell script.

These types of dialog boxes are implemented (though not all are necessarily compiled into dialog):

buildlist, calendar, checklist, dselect, editbox, form, fselect, gauge, infobox, inputbox, inputmenu, menu, mixedform, mixedgauge, msgbox (message), passwordbox, pause, prgbox, programbox, progressbox, radiolist, rangebox, passwordform, tailbox, tailboxbg, textbox, timebox, treeview, and yesno (yes/no).

Terms and Conditions of Use – 3%

- Use `yesno` dialog: `--yesno text height width`
- Example:
 - `dialog --title "terms" --yesno "xxx" 200 100`
- The content of terms don't matter
- Place terms in `~/mybrowser/userterm``

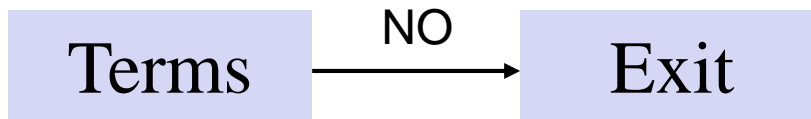
Terms and Conditions of Use

1. Terms By accessing this browser, you are agreeing to be bound by these browser Terms and Conditions of Use, all applicable laws and regulations, and agree that you are responsible for compliance with any applicable local laws. If you do not agree with any of these terms, you are prohibited from using or accessing this site. The materials contained in this browser are protected by applicable copyright and trade mark law. 2. Use License Permission is granted to temporarily download one copy of the materials (information or software) on Mango browser's browser for personal, non-commercial transitory viewing only. This is the grant of a license, not a transfer of title, and under this license you may not: modify or copy the materials; use the materials for any commercial purpose, or for any public display (commercial or non-commercial); attempt to decompile or reverse engineer any software contained on Mango browser's browser; remove any copyright or other proprietary notations from the materials; or transfer the materials to another person or "mirror" the materials on any other server. This license shall automatically terminate if you violate any of these restrictions and may be terminated by Mango browser at any time. Upon terminating your viewing of these materials or upon the termination of this license, you must destroy any downloaded materials in your possession whether in electronic or printed format. 3. Disclaimer The materials on Mango

< Yes >

< No >

Flowchart



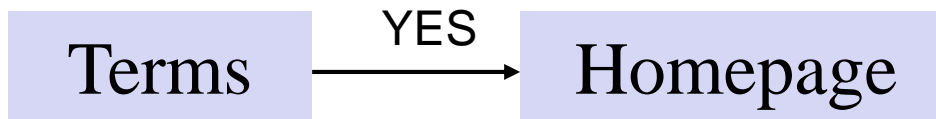
Apology
Sorry. You can't use Mango Browser, if you don't agree the user terms

Dialog of disagreement

- ❑ Use `msgbox` dialog: `--msgbox text height width`

- ❑ Example:
 - `dialog --title 'Apology' --msgbox "Sorry" 200 100`

Flowchart - Homepage (3%)



Mango Browser

搜尋 圖片 地圖 Play YouTube 新聞 Gmail 雲端硬碟 更多 >>
網頁紀錄 | 設定 | 登入

台灣

進階搜尋語言

工具

[Google 搜尋][好手氣]

Google.com.tw 還提供： English
廣告服務商業解決方案Google 完全手冊Google.com

(C) 2016 - 隱私權 - 服務條款

How to generate a page?

- ❑ Use w3m and `msgbox` dialog
- ❑ What is w3m?
 - a text based web browser and pager

```
搜尋 圖片 地圖 Play YouTube 新聞 Gmail 雲端硬碟 更多 >>
網頁紀錄 | 設定 | 登入

現代原子筆發明者、阿根廷發明家 Ladislao Jose' Biro 117歲誕辰

[_____] 進
           尋
           工

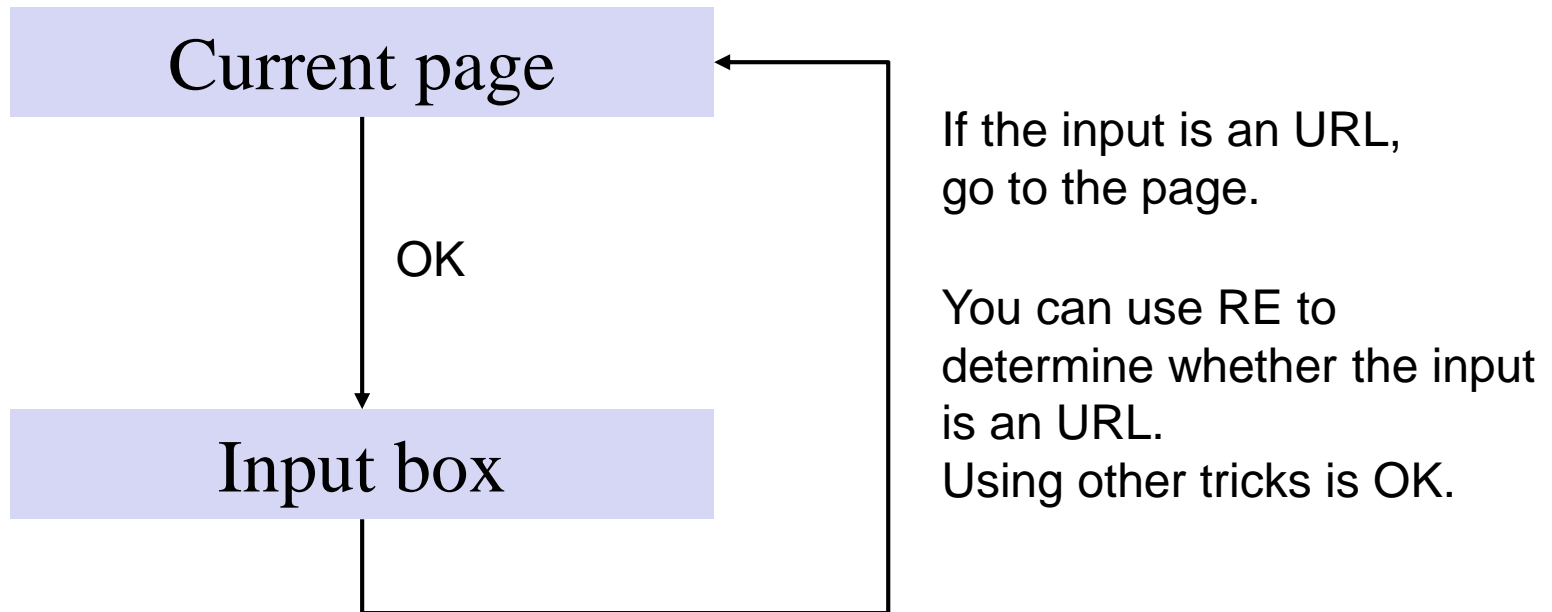
           [Google 搜尋][好手氣]

           Google.com.tw 還提供： English
           廣告服務商業解決方案Google 完全手冊Google.com

           (C) 2016 - 隱私權 - 服務條款
```

- ❑ `dialog --msgbox "$(w3m --dump google.com)" 200 100`

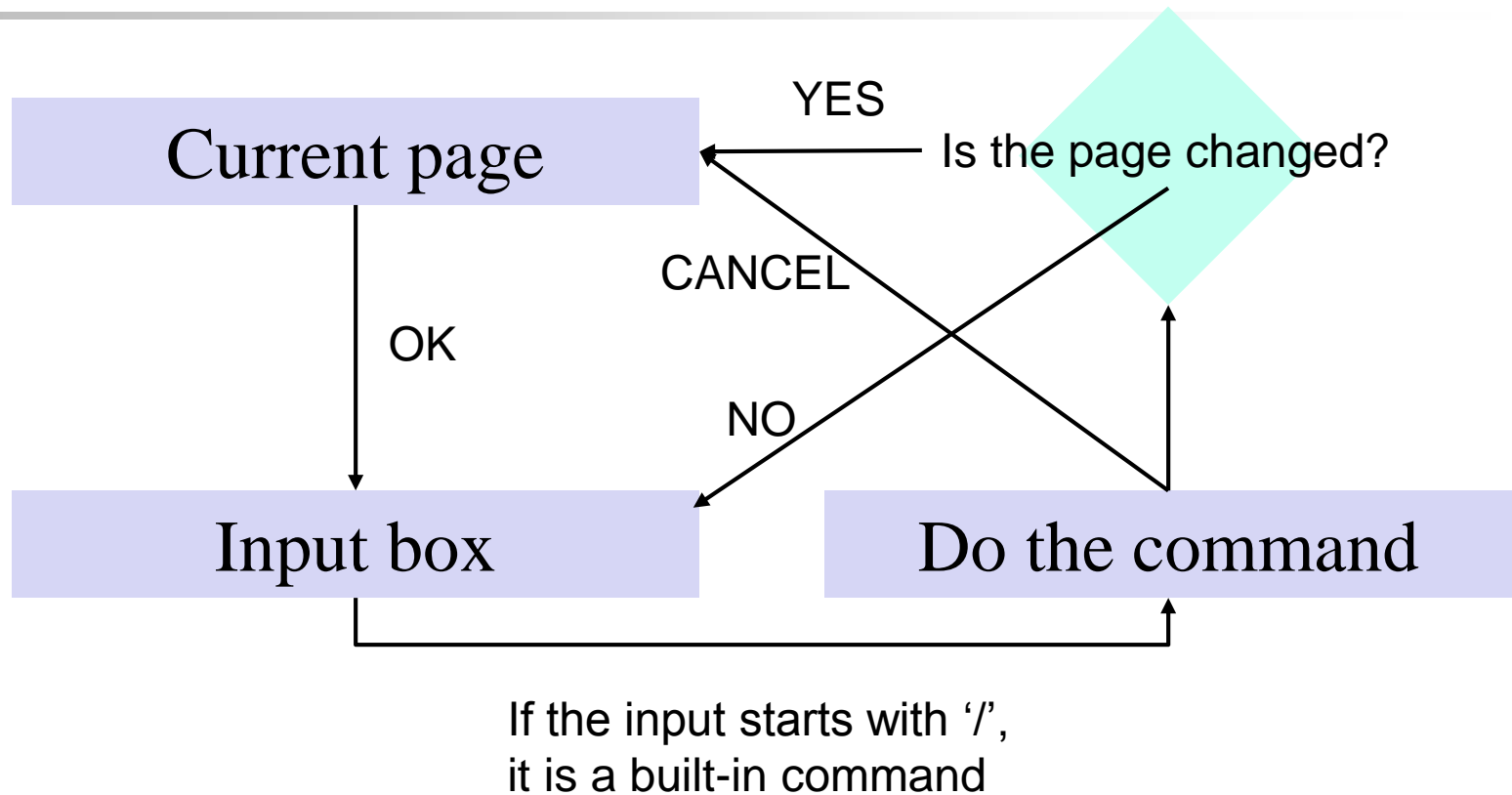
Flowchart – URL (12%)



```
Mango Browser
https://nasa.cs.nctu.edu.tw Show current url at here
```

- ❑ Use ``inputbox`` dialog to get the input.

Flowchart – Built-in command (30%)



What commands do we have?

- ❑ /S /source – curl -s -L , w3m --dump_source*
 - Show the source code of the page in the `msgbox` dialog.
- ❑ /L /link – use RE to grep ...
 - Show all links of this page in the `menu` dialog.
 - Select one of them to go to that link.
- ❑ /D /download – wget, curl -o, fetch -o
 - Show all links of the page in the `menu` dialog.
 - Select one of them to download that link to ~/Downloads/.
- ❑ /B /bookmark – save bookmark in `~/.mybrowser/bookmark`
 - Show `add`, `delete` and all bookmarks.
- ❑ /H /help – place this page in `~/.mybrowser/help`
 - Show the help page.

/S, /source: show the source code

Mango Browser

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8" />
  <title>NCTU CSCC, System and Network Administration</title>
</head>
<body>
  <b>Graduate Courses</b><br />
  <a href="/sap">System Administration Praticce</a><br />
  <a href="/nap">Network Administration Praticce</a><br />
  <br />
  <b>Undergraduate Courses</b><br />
  <a href="/sa">Computer System Administration</a><br />
  <a href="/na">Computer Network Administration</a><br />
  <a href="/nm">(Computer) Network Management</a><br />
  <br />
</body>
</html>
```

/L, /link: show all links of this page

```
Mango Browser
Links:
1 https://nasa.cs.nctu.edu.tw/sap
2 https://nasa.cs.nctu.edu.tw/nap
3 https://nasa.cs.nctu.edu.tw/sa
4 https://nasa.cs.nctu.edu.tw/na
5 https://nasa.cs.nctu.edu.tw/nm
6 https://code.google.com/p/smartquestions/
7 http://www.catb.org/~esr/faqs/smart-questions.html
8 https://www.cs.nctu.edu.tw/cchonor/
```

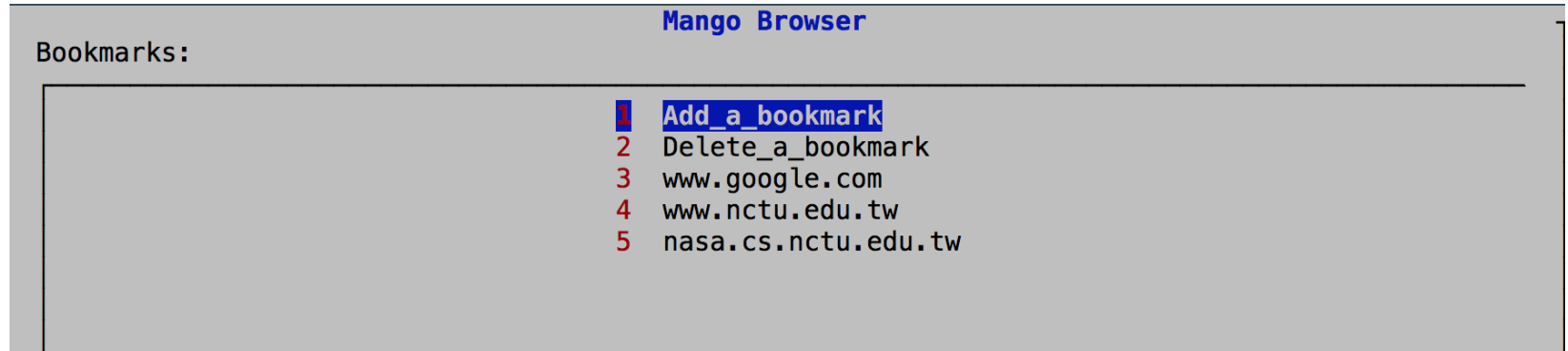
/D, /download: select a link to download

Mango Browser

Downloads:

- 1 https://nasa.cs.nctu.edu.tw/sap/2016/slides/105SA_syllabus.pdf
- 2 https://nasa.cs.nctu.edu.tw/sap/2016/slides/105SA_syllabus.pptx
- 3 https://nasa.cs.nctu.edu.tw/sap/2016/slides/01-Install_FreeBSD10.3.pdf
- 4 https://nasa.cs.nctu.edu.tw/sap/2016/slides/01-Install_FreeBSD10.3.ppt
- 5 https://nasa.cs.nctu.edu.tw/sap/2016/slides/Port_Forwarding_VirtualBox_VMwarePlayer.pptx
- 6 https://nasa.cs.nctu.edu.tw/sap/2016/slides/Installing_Applications.pdf
- 7 https://nasa.cs.nctu.edu.tw/sap/2016/slides/Installing_Applications.pptx
- 8 https://nasa.cs.nctu.edu.tw/sap/2016/slides/Hw1-1_spec.pdf
- 9 <https://nasa.cs.nctu.edu.tw/sap/>

/B, /bookmark: Show all bookmarks.

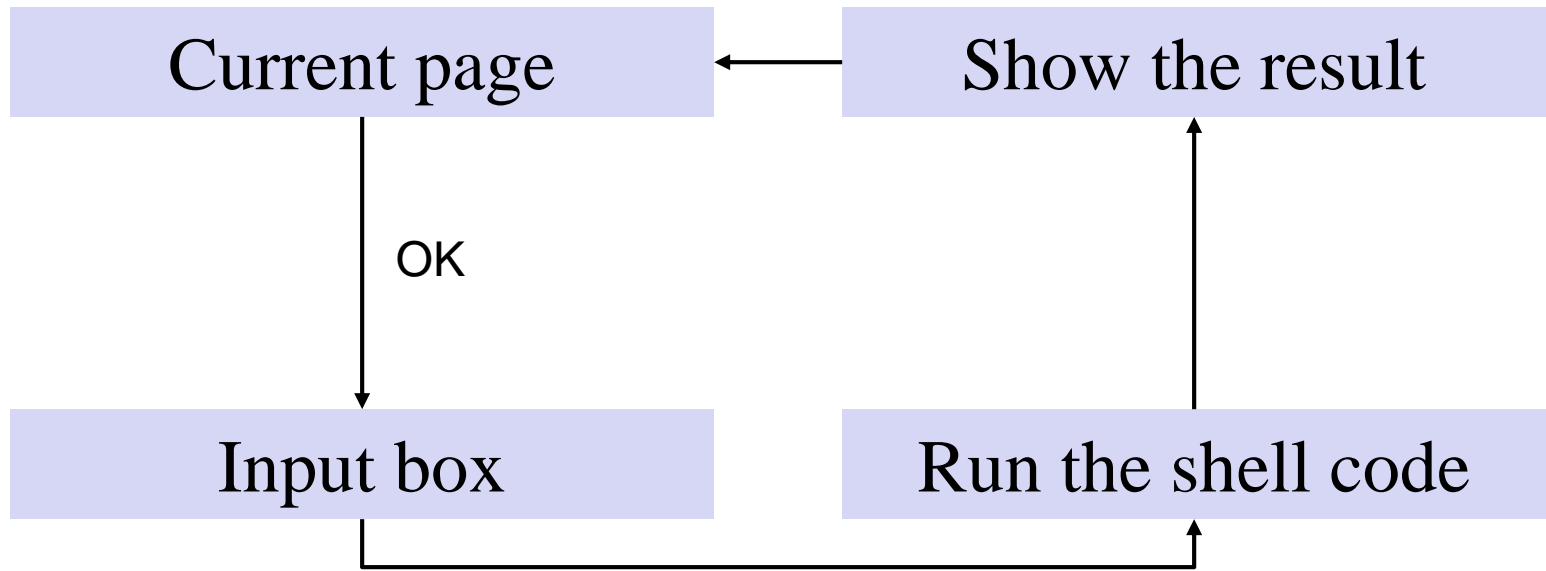


/H, /help: the help page

Mango Browser

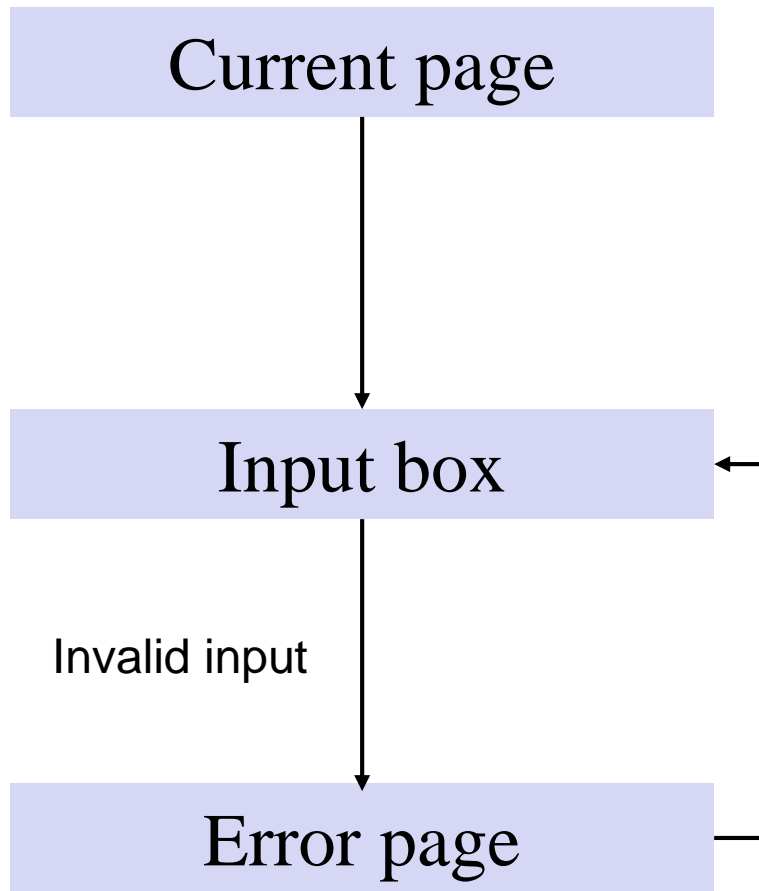
```
URL => go to the URL
/S => show me the source code
/L => select a link to go
/D => select a link to download
/B => bookmark
/H => help page
!${cmd} => execute the shell cmd
```

Flowchart – Shell command (6%)



If the input starts with '!',
it is a shell command

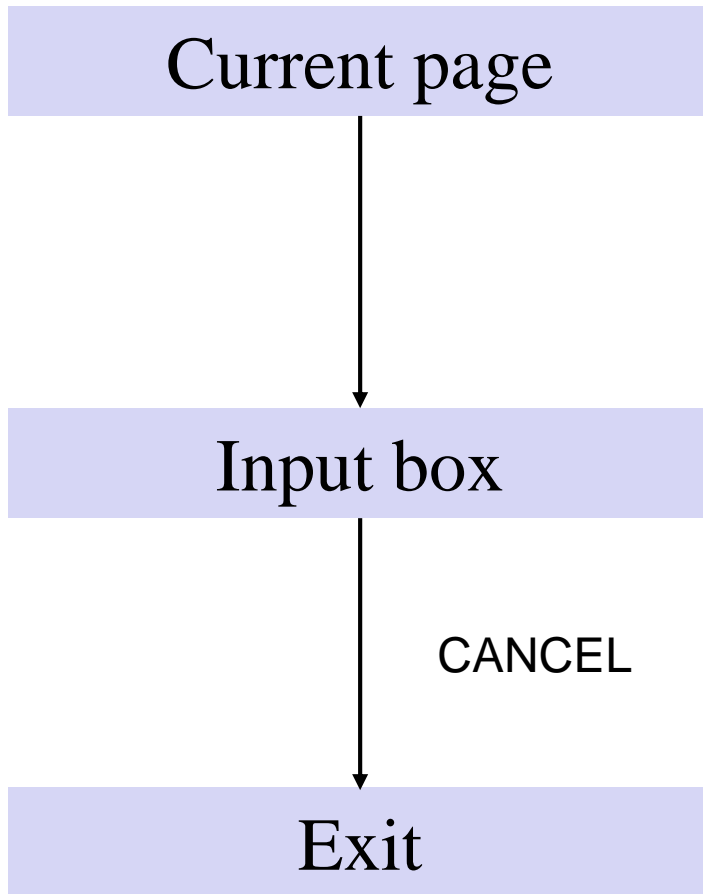
Flowchart – Invalid input (3%)



Mango Browser

Invalid Input
Try /H for help messages.

Flowchart – Exit (3%)



Bonus

- ❑ 3-1 Top 10 shortest code (less pipe > less character) (5%)
- ❑ 3-2 Last page, next page (3%)
 - Use commands to go to last or next page.
- ❑ 3-2 Error log in ~/.mybrowser/error (2%)
 - Without any error output on tty

Help

- ❑ IRC channel #nctuNASA on irc.freenode.net
- ❑ Email ta@nasa.cs.nctu.edu.tw or E3