



# System Administration HW3 - Shell Programming

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ssuyi

# Requirements

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- ❑ 3-1: Directory Analyzer (15%)
  - Use **one-line** command to show statistic of a directory.
- ❑ 3-2: Weather Indicator(30%)
  - Get weather info. From Yahoo Weather API.
- ❑ 3-3: Command Line Game: 2048(45%)
  - Play 2048 in Bourne Shell
- ❑ Modify code (10%) (Write code by yourself!!)
- ❑ Please write the scripts in Bourne Shell(sh)
  - no score if you use csh or bash or other languages.
- ❑ Due : 2015/11/15 (Sun.) upload **XXXXXXXXX.tar** on e3
- ❑ Demo (After midterm) on **bsd\*.cs**

## 3-1: Directory Analyzer (15%)

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# 3-1: Directory Analyzer (15%)

## - Requirement (1/4)

```
└─ssuyi@bsd4.cs.nctu.edu.tw ~/trix <master>
└─┬─> da
  directory:
    2.4M   .git
    528K   src
    380K   dist
    184K   test
    108K   assets
    64K    polyfills
    16K    bin
  file:
    20K    README.md
    4.0K   .blade.yml
    4.0K   CONDUCT.md
    4.0K   Gemfile
    4.0K   Gemfile.lock
    4.0K   LICENSE
    4.0K   bower.json
    4.0K   config.ru
    4.0K   package.json
    0B     .gitignore
    0B     .ruby-version
  total:
    3.7M   total
```

# 3-1: Directory Analyzer (15%)

## - Requirement (2/4)

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- List all file (including hidden file) in current directory( “.” ).
- List sub-directory summary.
- Sort files and directory from largest to smallest separately.
- Only calculate regular file and directory.
- Test on `bsd*.cs`
- Link, FIFO, block devices should be discard.

# 3-1: Directory Analyzer (15%)

## - Requirement (3/4)

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- One-line command.
- Only pipes (cmd | cmd2) and back quote are allowed.
- No temporary files or shell variables
- No \$(cmd)
- No "&&", "||", ">", ">>", "<", ":", "&"
- awk** and **sed** are allowed, but no other script (perl, python, ... etc)
- You can use only less than **12** pipes(command) calculated by `"/bin/sh -x da"`, so command in back quote will be included.

# 3-1: Directory Analyzer (15%)

## - Requirement (4/4)

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### □ Hint

- du(1)
- xargs(1)
- sort(1)
- sed(1)
- awk(1)
- ls(1)
- stat(1)

# 3-1: Directory Analyzer (15%) -Grade

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- Executable (2%)
  - ./da
- List directory (5%)
- List regular files (5%)
- Total disk usage (3%)



# 3-1: Directory Analyzer (15%)

## - Bonus

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- ❑ Sort code
  - top 15 shortest ones can get 5% bonus (pipes,chars)

## 3-2: Weather Indicator(30%)

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Get information from yahoo weather

## 3-2: Weather Indicator(30%)

## - Requirement (1/6)

```

r-ssuyi@bsd4.cs.nctu.edu.tw ~
└─> ./weather.sh -l hsinchu -u c -c
Hsinchu City, Fog, 23 °c
r-ssuyi@bsd4.cs.nctu.edu.tw ~
└─> ./weather.sh -l hsinchu -u c -a
Hsinchu City, Fog, 23 °c
29 Oct 2015 Thu 22 °c ~ 28 °c Clear
30 Oct 2015 Fri 22 °c ~ 27 °c Mostly Sunny
31 Oct 2015 Sat 21 °c ~ 26 °c Partly Cloudy/Wind
1 Nov 2015 Sun 21 °c ~ 25 °c Partly Cloudy
2 Nov 2015 Mon 21 °c ~ 23 °c Partly Cloudy/Wind
sunrise: 5:59 am, sunset: 5:17 pm
r-ssuyi@bsd4.cs.nctu.edu.tw ~
└─> ./weather.sh -l hsinchu -u c -s
sunrise: 5:59 am, sunset: 5:17 pm
r-ssuyi@bsd4.cs.nctu.edu.tw ~
└─> ./weather.sh -l hsinchu -u c -d 4
29 Oct 2015 Thu 22 °c ~ 28 °c Clear
30 Oct 2015 Fri 22 °c ~ 27 °c Mostly Sunny
31 Oct 2015 Sat 21 °c ~ 26 °c Partly Cloudy/Wind
1 Nov 2015 Sun 21 °c ~ 25 °c Partly Cloudy
r-ssuyi@bsd4.cs.nctu.edu.tw ~
└─> ./weather.sh -l hsinchu -c -s
Hsinchu City, Fog, 73 °f
sunrise: 5:59 am, sunset: 5:17 pm

```

## 3-2: Weather Indicator(30%) - Requirement (2/6)

- ❑ Show weather information (yahoo) of cities

```
~$ sshui@bsd4.cs.nctu.edu.tw /tmp  
└─> ./weather.sh -l hsinchu,taipei,tainan -u c -c  
Hsinchu City, Light Rain, 25 °c  
Taipei City, Mostly Cloudy, 25 °c  
Tainan City, Light Rain Shower, 28 °c
```

- ❑ Can show different unit(Celsius, Fahrenheit)
- ❑ Current weather condition
- ❑ sunset/sunrise time
- ❑ 5 day forecast
- ❑ Can read configuration from ~/.weather.conf

## 3-2: Weather Indicator(30%) - Requirement (3/6)

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- ❑ weather [-h] [-l locations] [-u unit] [-a | -c | -d day | -s]
- ❑ -h print help (1%)
- ❑ -l set locations (4%)
- ❑ -u set unit (2%)
- ❑ -a equal to -c -d5 -s (2%)
- ❑ -c current condition (6%)
- ❑ -d forecast (6%)
- ❑ -s sunrise/sunset (3%)

## 3-2: Weather Indicator(30%)

### - Requirement (4/6)

#### ❑ argument check (3%)

- No location

```
r-ssuyi@bsd4.cs.nctu.edu.tw /tmp
└─> ./weather.sh
Must specify location
./weather -l locations [-u unit] [-a | -c | -d day | -s]
```

- No type of information

```
r-ssuyi@bsd4.cs.nctu.edu.tw /tmp
└─> ./weather.sh -l hsinchu
Must specify type of information
./weather -l locations [-u unit] [-a | -c | -d day | -s]
```

## 3-2: Weather Indicator(30%) - Requirement (5/6)

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- ❑ Default unit and configuration (3%)
  - Default unit = f
  - ~/.weather.conf can set default location and unit

```
└─ssuyi@bsd4.cs.nctu.edu.tw /tmp
└─▶ ./weather.sh -c
Hsinchu City, Light Rain, 25 °c
└─ssuyi@bsd4.cs.nctu.edu.tw /tmp
└─▶ cat ~/.weather.conf
location=hsinchu
unit=c
```

# 3-2: Weather Indicator(30%)

## - Requirement (6/6)

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### □ Hint

- getopt(1)
- curl(1)
- grep(1)
- sed(1)
- tail(1)
- head(1)
- WOEID
- yahooapis



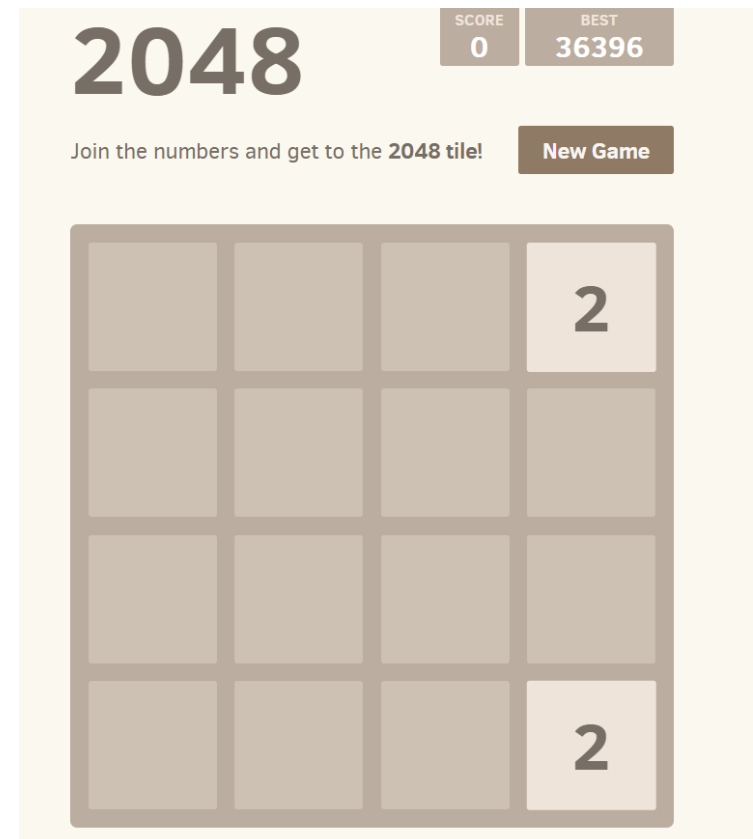
3-3: CLI Game: 2048 (45%)

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# 3-3: CLI Game: 2048 (45%)

## - Requirement (1/8)

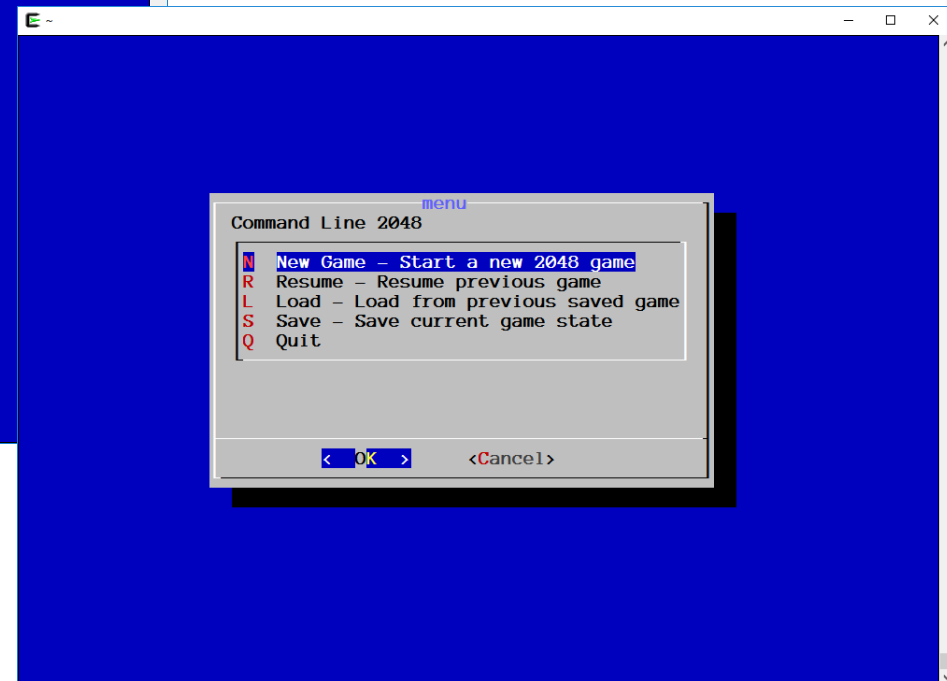
- ❑ 2048
  - <https://gabrielecirulli.github.io/2048/>
- ❑ Make your own one in Bourne Shell



# 3-3: CLI Game: 2048 (45%)

## - Requirement (2/8)

- ❑ Welcome message & main menu (8%)

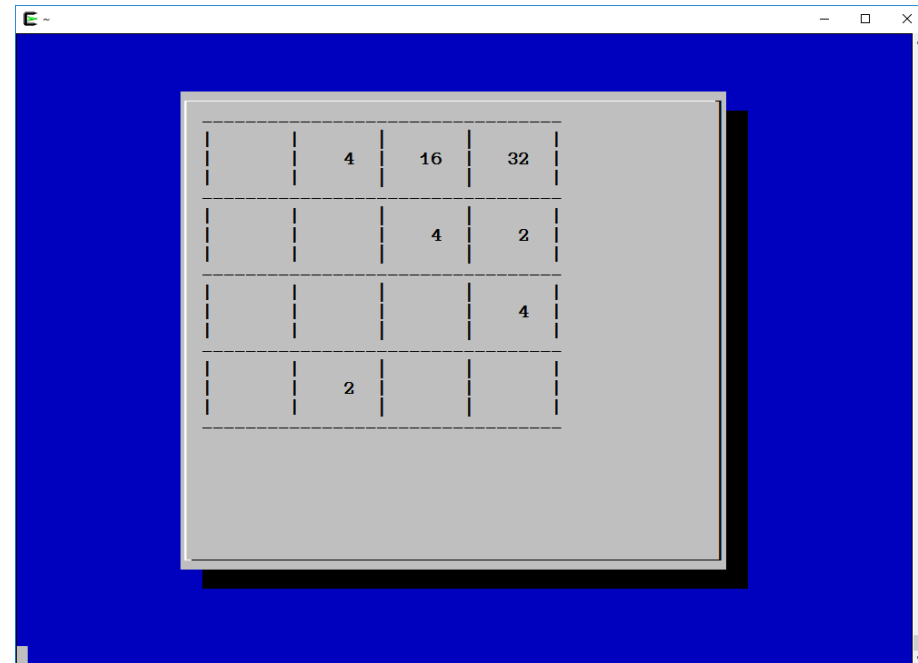


# 3-3: CLI Game: 2048 (45%)

## - Requirement (3/8)

### ❑ New Game

- New board with 2 random pieces. (4%)
- Move pieces and merge while WASD **KEYPRESSED**. (20%)
- After each move, a new piece(2,4) randomly shows up. (4%)
- When q **PRESSED**, go back to main menu. (2%)



# 3-3: CLI Game: 2048 (45%)

## - Requirement (4/8)

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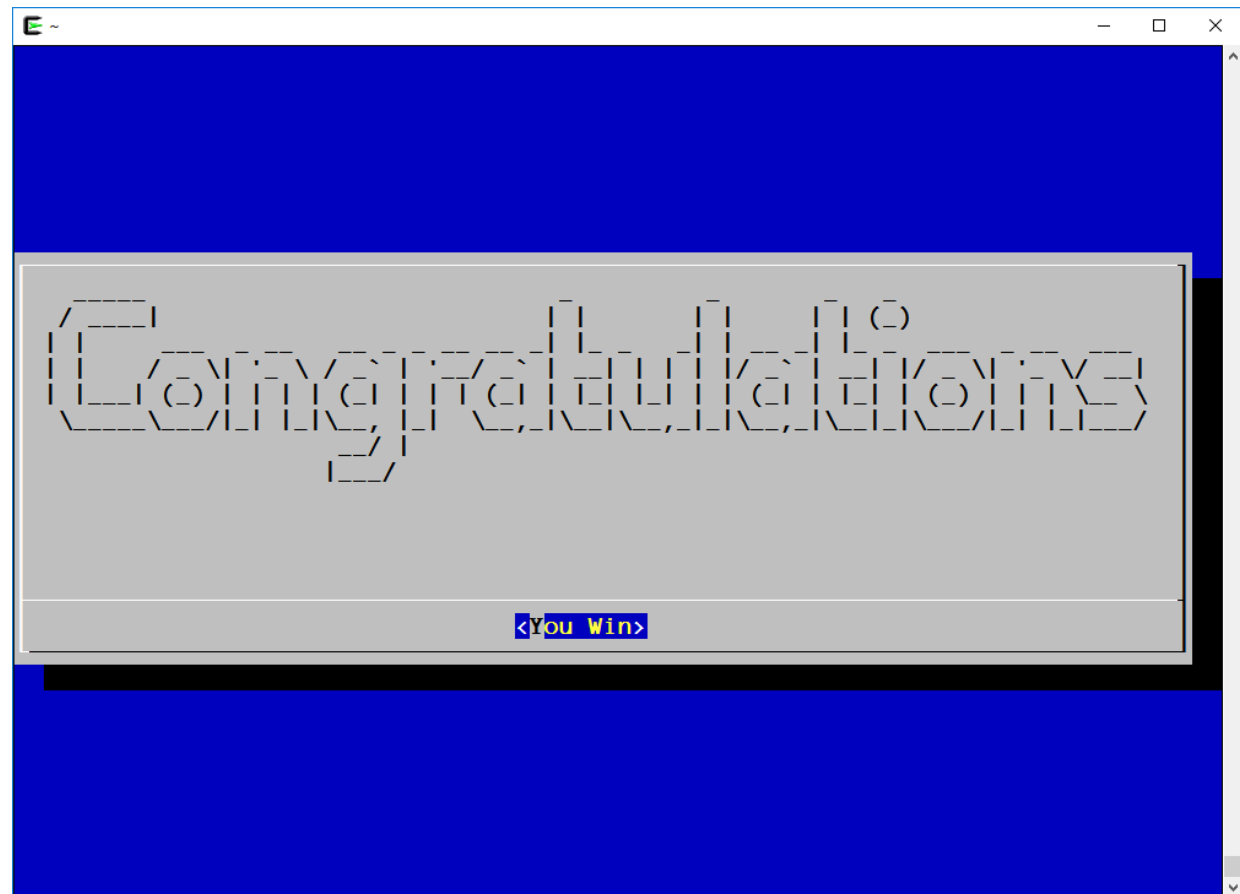
### ❑ Resume (3%)

- Continue to play game, if you press q in game
- After loading previous saved game, continue to play

# 3-3: CLI Game: 2048 (45%)

## - Requirement (5/8)

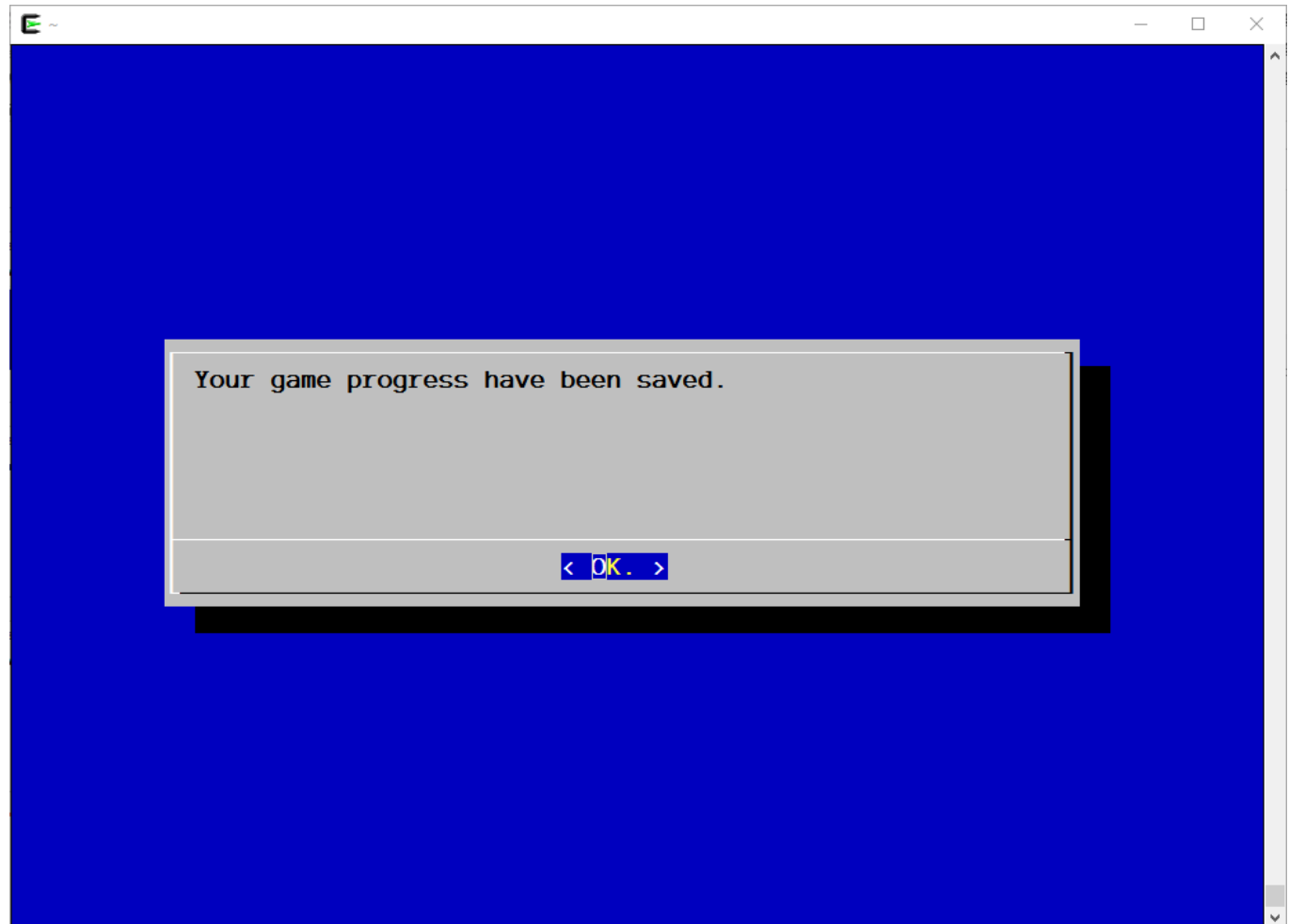
- ❑ Win message (3%)
  - 64 or 128 to win



# 3-3: CLI Game: 2048 (45%)

## - Requirement (6/8)

- ❑ Save game (3%)



# 3-3: CLI Game: 2048 (45%)

## - Requirement (7/8)

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- ❑ Load game (3%)





# 3-3: CLI Game: 2048 (45%)

## - Requirement (8/8)

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### □ Hint

- dialog(1)
- awk(1)
- tail(1)
- head(1)
- tr(1)

## 3-3: CLI Game: 2048 (45%)

- Bonus

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- ❑ can save and load for 5 game (3%)

# Make a clean environment

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❑ `env -i`

```
PATH=/usr/local/bin:/usr/local/sbin:/usr  
/bin:/usr/sbin:/bin:/sbin sh
```

# Help

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- ❑ IRC channel #nctuNASA on freenode
- ❑ Newsgroup cs.course.sysadmin
- ❑ BBS bs2.to board CS-SysAdmin
- ❑ Email ta@nasa.cs.nctu.edu.tw
- ❑ Goto CSCC to ask professional 3F!