Homework 2 - Lisp

Installation

SBCL

Steel **B**ank **C**ommon **L**ISP

A high performance **ANSI Common Lisp** implementation.

SBCL Official Website:
http://www.sbcl.org/index.html

Install SBCL on Windows

Go to this website,

https://github.com/akovalenko/sbcl-win32-threads/wiki

32 bit:
sbcl-1.1.4.0.mswin.1288-90ab477-x86.msi

64 bit:
sbcl-1.1.4.0.mswin.1288-90ab477-x86-64.msi

Install SBCL on Linux

use APT

```
$ sudo apt-get install sbcl
```

use YUM

```
$ sudo yum install sbcl
```

others

```
That's your business...XD
```

Install SBCL on OS X

use homebrew

```
$ brew install sbcl
```

use macports

```
$ sudo port install sbcl
```

If you never believe anyone,

Compile by yourself...

http://www.sbcl.org/getting.html

Command Line Interface

for Windows
命名提示字元

for Unix-like OS
終端機

Interactive Env

```
$ sbcl
```

Interactive Env

```
$ sbcl
This is SBCL 1.0.57.0.debian, an implementation of ANSI
Common Lisp.
More information about SBCL is available at
<http://www.sbcl.org/>.

SBCL is free software, provided as is, with absolutely no
warranty.
It is mostly in the public domain; some portions are
provided under
BSD-style licenses.  See the CREDITS and COPYING files in
the
distribution for more information.
*
```

```
* ( + 1 2 )
```

```
* ( + 1 2 )

3
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"

"Hello World"
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"

"Hello World"
* (DEFUN FIB(n)
   (IF (< n 2)
    n
     (+ (FIB (- n 1)) (FIB (- n 2)))))
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"

"Hello World"
* (DEFUN FIB(n)
   (IF (< n 2)
    n
     (+ (FIB (- n 1)) (FIB (- n 2)))))

FIB
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"

"Hello World"
* (DEFUN FIB(n)
   (IF (< n 2)
    n
     (+ (FIB (- n 1)) (FIB (- n 2)))))

FIB
* (FIB 20)
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"

"Hello World"
* (DEFUN FIB(n)
   (IF (< n 2)
    n
     (+ (FIB (- n 1)) (FIB (- n 2)))))


FIB
* (FIB 20)

6765
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"

"Hello World"
* (DEFUN FIB(n)
   (IF (< n 2)
    n
     (+ (FIB (- n 1)) (FIB (- n 2)))))


FIB
* (FIB 20)


6765
* (exit)
```

```
* ( + 1 2 )

3
* ( + 1 2 3 )

6
* "Hello World"

"Hello World"
* (DEFUN FIB(n)
    (IF (< n 2)
     n
      (+ (FIB (- n 1)) (FIB (- n 2)))))

FIB
* (FIB 20)

6765
* (exit)
$
```

Script File

```
;;; file: fib.lsp

(DEFUN FIB(n)
 (IF (< n 2)
  n
  (+ (FIB (- n 1)) (FIB (- n 2)))
 )
)


(print (FIB 20))
```

Execution

```
$ sbcl --script fib.lsp

6765
```

If you still have any question about SBCL,

Read **T**he **F**riendly **M**anual.

ANSI Common Lisp Tutorial:

http://acl.readthedocs.org/en/latest/

SBCL Manual:

http://www.sbcl.org/manual/index.html

Read **T**he **F**riendly **M**anual or
Use **T**he **F**riendly **G**oogle first,

before you ask teacher or TAs.

`diff` command

`diff` is an useful command on Unix-based system. You can use it to compare two files. It will show you the difference between them.

diff command

hello-world.c

```
#include <stdio.h>
int main() {
  printf("Hello World");
  return 0;
}
```

hello-world.cpp

```
#include <iostream>
using namespace std;
int main() {
  cout << "Hello World" << end;
  return 0;
}
```

diff command

```
$ diff hello-world.c hello-world.cpp
--- hello-world.c    2016-04-10 19:22:38.000000000 +0800
+++ hello-world.cpp 2016-04-10 19:22:45.000000000 +0800
@@ -1,6 +1,7 @@
-#include <stdio.h>
+#include <iostream>
+using namespace std;
 int main() {
-  printf("Hello World");
+  cout << "Hello World" << end;
   return 0;
 }
```

Input

- The filenames of two input files must be `file1.txt` and `file2.txt`.

Output

- Output the result like "`$ diff file1.txt file2.txt`".

- Output the content part only. It means we don't need some parts like "`@@ -1,6 +1,7 @@`".

- Keep all the same lines in the output.

- No need to colorize the output.
  - If you want, you can do it.

Sample Output

```
$ sbcl --script diff.lsp
-#include <stdio.h>
+#include <iostream>
+using namespace std;
 int main() {
-  printf("Hello World");
+  cout << "Hello World" << end;
   return 0;
 }
```

Sample Output

```
$ sbcl --script diff.lsp
-#include <stdio.h>
+#include <iostream>
+using namespace std;
 int main() {
-  printf("Hello World");
+  cout << "Hello World" << end;
   return 0;
 }
```

diff chunk #1

diff chunk #2

Sample Output

```
$ sbcl --script diff.lsp
-#include <stdio.h>
+#include <iostream>
+using namespace std;
 int main() {            same lines #1
-  printf("Hello World");
+  cout << "Hello World" << end;
    return 0;
 }                       same lines #2
```

Deadline

2016/04/24 22:00