



MY_NAVY

YOU SUNK MY BATTLESHIP !




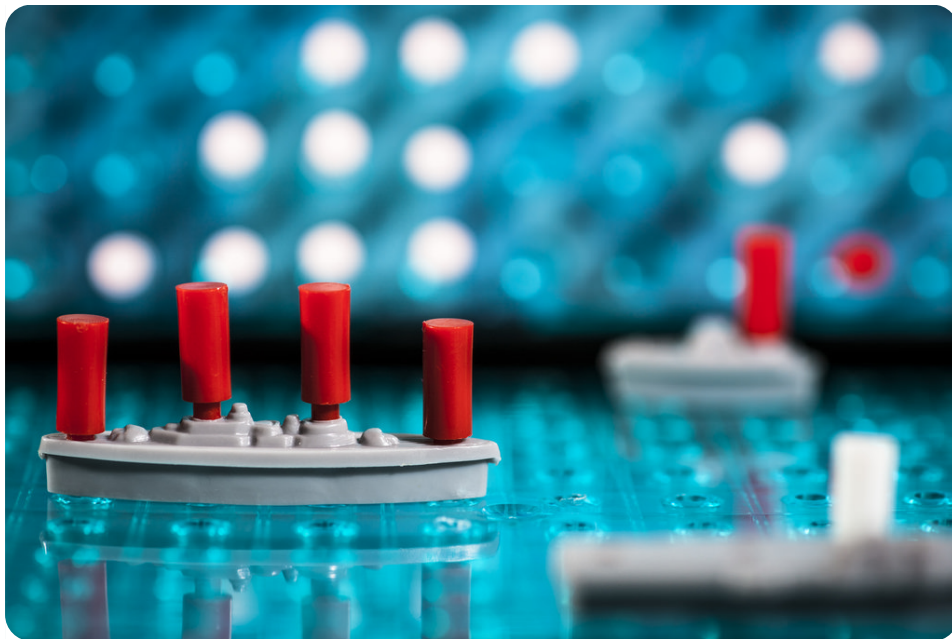
MY_NAVY

Preliminaries

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binary name: my_navy
language: C
groupe size: 2
compilation: via Makefile, including re, clean and fclean rules
Authorized functions: open, close, read, write, lseek, malloc, free, getpid, kill, signal, sigaction, sigemptyset, setcontext, getcontext, usleep, nanosleep, pause, getline, fopen, fclose, fseek, memset, memcpy

- 
- ✓ The totality of your source files, except all useless files (binary, temp files, objfiles, ...), must be included in your delivery.
 - ✓ All the bonus files (including a potential specific Makefile) should be in a directory named bonus.
 - ✓ Error messages have to be written on the error output, and the program should then exit with the 84 error code (0 if there is no error).
 - ✓ You are allowed to use one (and only one) global variable, if you can justify it.



Project

You all know the very famous Battleship game. Well, I hope so.

You must code a terminal version of this game using signals.

The two players are **ONLY** allowed to communicate using the signals *SIGUSER1* and *SIGUSER2*.



Signals can be lost, be careful when you are using your protocol

The map size is 8x8. On each turn, you must display your positions, and then your enemy's positions.

At the end of the game (when all the ships of a player have been hit), you must display whether “I won” (and return 0) or “Enemy won” (and return 1).

```
Terminal
B-PSU-100> ./my_navy -h
USAGE
  ./my_navy [first_player_pid] navy_positions
DESCRIPTION
  first_player_pid: only for the 2nd player. pid of the first player.
  navy_positions: file representing the positions of the ships.
```

The file passed as parameter must contain lines formatted the following way:

```
Terminal
LENGTH : FIRST_SQUARE : LAST_SQUARE
```

where LENGTH is the length of the ship, FIRST_SQUARE and LAST_SQUARE its first and last positions.

In this file, you must have 4 ships (of lengths 2, 3, 4 and 5).

If the navy file is invalid, you have to quit the program and consider it as an error.



Beware, on the testing environment you only have the right to read the file.

Example



The display must be EXACTLY the same as the one below.

Here is an example game.

```
Terminal
B-PSU-100> cat pos1
2:C1:C2
3:D4:F4
4:B5:B8
5:D7:H7
```

```
Terminal
B-PSU-100> cat pos2
2:C4:D4
3:H1:H3
4:E6:H6
5:B1:F1
```

Connection

Player 1:

```
Terminal
B-PSU-100> ./my_navy pos1
my_pid: 4242

waiting for enemy connection...

enemy connected
```

Player 2:

```
Terminal
B-PSU-100> ./my_navy 4242 pos2
my_pid: 4243

successfully connected
```

Turn #1

Player 1:

```
Terminal
my navy:
|A B C D E F G H
-+-----
1|. . 2 . . . . .
2|. . 2 . . . . .
3|. . . . . . . .
4|. . . 3 3 3 . .
5|. 4 . . . . . .
6|. 4 . . . . . .
7|. 4 . 5 5 5 5 5
8|. 4 . . . . . .

enemy navy:
|A B C D E F G H
-+-----
1|. . . . . . . .
2|. . . . . . . .
3|. . . . . . . .
4|. . . . . . . .
5|. . . . . . . .
6|. . . . . . . .
7|. . . . . . . .
8|. . . . . . . .

attack: Z0

wrong position

attack: B6

result: B6:missed

waiting for enemy's attack...
```

Player 2:

```
Terminal
my navy:
|A B C D E F G H
-+-----
1|. 5 5 5 5 5 . 3
2|. . . . . . 3
3|. . . . . . 3
4|. . 2 2 . . .
5|. . . . . . .
6|. . . . 4 4 4 4
7|. . . . . . .
8|. . . . . . .

enemy navy:
|A B C D E F G H
-+-----
1|. . . . . . .
2|. . . . . . .
3|. . . . . . .
4|. . . . . . .
5|. . . . . . .
6|. . . . . . .
7|. . . . . . .
8|. . . . . . .

waiting for enemy's attack...

result: B6:missed

attack: 4

wrong position

attack: C1

result: C1:hit

waiting for enemy's attack...
```

Turn #2

Player 1:

```
Terminal
my navy:
|A B C D E F G H
-+-----
1|. . x . . . .
2|. . 2 . . . .
3|. . . . . .
4|. . . 3 3 3 .
5|. 4 . . . .
6|. 4 . . . .
7|. 4 . 5 5 5 5
8|. 4 . . . .

enemy navy:
|A B C D E F G H
-+-----
1|. . . . .
2|. . . . .
3|. . . . .
4|. . . . .
5|. . . . .
6|. o . . . .
7|. . . . .
8|. . . . .

attack: C4

result: C4:hit

waiting for enemy's attack...

result: D1:missed

waiting for enemy's attack...
```


Player 2:

```
Terminal
my navy:
|A B C D E F G H
-+-----
1|. 5 5 5 5 5 . 3
2|. . . . . . 3
3|. . . . . . 3
4|. . 2 2 . . .
5|. . . . . . .
6|. o . . 4 4 4 4
7|. . . . . . .
8|. . . . . . .

enemy navy:
|A B C D E F G H
-+-----
1|. . x . . . .
2|. . . . . .
3|. . . . . .
4|. . . . . .
5|. . . . . .
6|. . . . . .
7|. . . . . .
8|. . . . . .

waiting for enemy's attack...

result: C4:hit

attack: D1

result: D1:missed
```



Etc...

Last Turn

Player 1:

```
Terminal
attack: H6

result: H6:hit

my navy:
| A B C D E F G H
+-----+
1| o . x o . o . o
2| . . 2 . . o . .
3| . o . . o . . .
4| . . . x x x . .
5| . x o . . o o .
6| . x . . . . . .
7| o x . x x x 5 5
8| . x . o . o . o

enemy navy:
| A B C D E F G H
+-----+
1| . x x x x x . x
2| . . . o . o . x
3| . o . . . . o x
4| . . x x o . . o
5| . . . . . o . .
6| . o . . x x x x
7| . . o . . . o .
8| . . . . . o . .

I won
```

Player 2:

```
Terminal
waiting for enemy's attack...

result: H6:hit

my navy:
|A B C D E F G H
+-----+
1|. x x x x x . x
2|. . . o . o . x
3|. o . . . . o x
4|. . x x o . . o
5|. . . . . o . .
6|. o . . x x x x
7|. . o . . . o .
8|. . . . . o . .

enemy navy:
|A B C D E F G H
+-----+
1|o . x o . o . o
2|. . . . . o . .
3|. o . . o . . .
4|. . . x x x . .
5|. x o . . o o .
6|. x . . . . . .
7|o x . x x x . .
8|. x . o . o . o

Enemy won
```

Bonus



You have to make the mandatory part before adding bonus!

Here are some example of bonus:

- ✓ play against an AI,
- ✓ a nice interface, music,
- ✓ multiplayer mode with more than 2 players,
- ✓ customized game,
- ✓ networking,
- ✓ and whatever you feel like.



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