

21CS11- C Programming

Programming Assignment [Group]

Game Project- Draughts

Submission Due: Week 8 (Sunday Before 12pm IST)

Weightage: 5%

Aim

This is a team project (groups of 4) and worth 5% of your final grade. It intends to evaluate your understanding and practical skills on C programming skills with the knowledge of expressions, conversions, control statements, arrays and functions. You are encouraged to do additional self-exploration for functions that are not covered in the lectures. You are required to complete all the tasks below.

In this Assignment, you are required to implement a practical game known as draught. You have to design and draught game, where the assessment involves

- **project brief**
- **project solution (codes) – Instructions are provided**
- **project demonstrate/presentation**
- **final project report along with a peer assessment.**

Assignment Background

The game of Draught is believed to be over 4,000 years old, and it is one of the easiest games to learn. But, it is not easy to master it. The objective of the game is to capture your opponent's tokens. All tokens jump only along the diagonal squares. A player may jump one of his tokens over one square occupied by his opponent's token. After the opponent's token is being jumped over, it is called the captured token, and it is removed off the board immediately. Several token may be captured by jumping repeatedly as long as the condition is fulfilled. All single jumps must be in forward direction.

Play the game:

<http://www.draughts.org/>

Specification Requirement

O		O		O		O	
	O		O		O		O
O		O		O		O	
	X		X		X		X
X		X		X		X	
	X		X		X		X

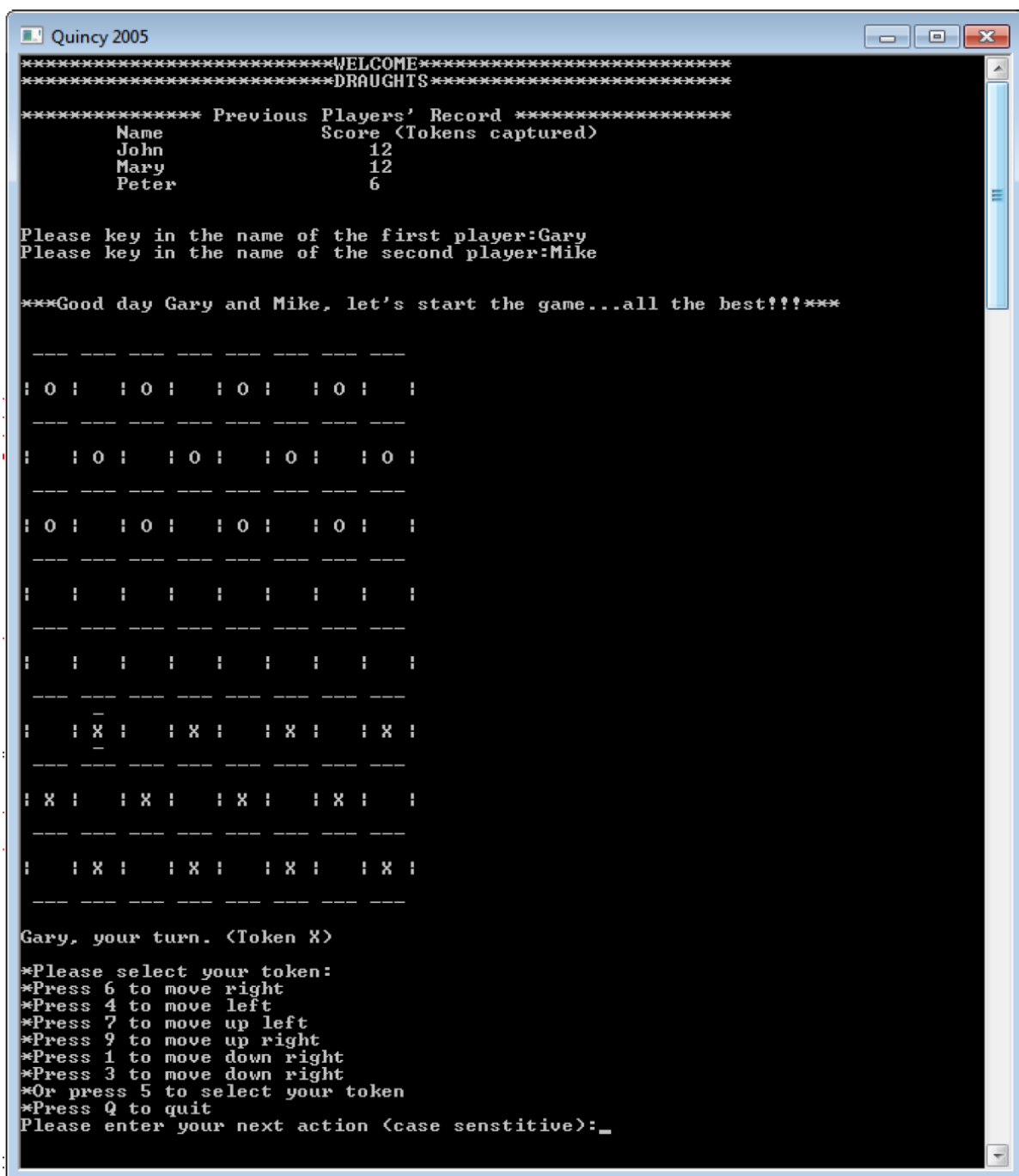
- ❖ Develop a game with C that generate a board with 12 tokens for each player on an 8 by 8 game board (2-dimensional array).
- ❖ You are allowed to design your own rules of playing the game, such as the movement of tokens and the way a token is captured.
- ❖ The performance of the player may be measured by counting the total of opponent's token being captured. (You may introduce other ways of measuring player's performance).
- ❖ Each element of array contains the following **suggested** attributes :
 - a variable of integer / character
 - and any other attributes you think appropriate to your program
 Thus, the element can be described as "struct" of array in the C programming language.
- ❖ You are expected to design your own structure for the program, and It should be documented in your design report to elaborate the details.
- ❖ The record of previous players is stored in a plain text data file. The information of all the previous players should be displayed at the beginning of the game. User / player will also be prompted to key in their information, and that information will then be stored in the same text file (optional).
- ❖ Input to the system is through a command window.
- ❖ This program must first prompt the user (in the command window) for the next action to be carried out. (Do provide appropriate menu of actions). The user should be able to terminate the program at any time.
- ❖ Output should be printed on window to show the latest layout of the board.
- ❖ The program codes MUST be in functions. DO NOT write all the code in the "main()" function.
- ❖ Graphical window interface can be used as an alternative (optional)
- ❖ This C program is recommended to be written is up to TEAM choice

Procedure of Program Development

Use an iterative process (spiral or prototype SDLC) to design and implement a solution to your program. That means

1. write a small program to do a little bit of the problem
 - a. compile and run the small program
2. next, add a function or two
 - a. compile and run the improved program
3. repeat step 2 until you are finished

Snapshots



```
Quincy 2005
*****WELCOME*****
*****DRAUGHTS*****
***** Previous Players' Record *****
      Name      Score (Tokens captured)
      John      12
      Mary       12
      Peter       6

Please key in the name of the first player:Gary
Please key in the name of the second player:Mike

***Good day Gary and Mike, let's start the game...all the best!!!***

  ---  ---  ---  ---  ---  ---  ---
|  O  |  |  O  |  |  O  |  |  O  |  |
  ---  ---  ---  ---  ---  ---  ---
|  |  O  |  |  O  |  |  O  |  |  O  |
  ---  ---  ---  ---  ---  ---  ---
|  O  |  |  O  |  |  O  |  |  O  |  |
  ---  ---  ---  ---  ---  ---  ---
|  |  |  |  |  |  |  |  |  |
  ---  ---  ---  ---  ---  ---  ---
|  |  |  |  |  |  |  |  |  |
  ---  ---  ---  ---  ---  ---  ---
|  |  X  |  |  X  |  |  X  |  |  X  |
  ---  ---  ---  ---  ---  ---  ---
|  X  |  |  X  |  |  X  |  |  X  |  |
  ---  ---  ---  ---  ---  ---  ---
|  |  X  |  |  X  |  |  X  |  |  X  |
  ---  ---  ---  ---  ---  ---  ---

Gary, your turn. (Token X)

*Please select your token:
*Press 6 to move right
*Press 4 to move left
*Press 7 to move up left
*Press 9 to move up right
*Press 1 to move down right
*Press 3 to move down right
*Or press 5 to select your token
*Press Q to quit
Please enter your next action (case sensitive):_
```

Gary pressed '5'

```
Quincy 2005

-----
| 0 | | 0 | | 0 | | 0 | |
-----
|  | 0 | | 0 | | 0 | | 0 |
-----
| 0 | | 0 | | 0 | | 0 | |
-----
|  | | | | | | | |
-----
|  | | | | | | | |
-----
|  |X| |X| |X| |X|
-----
|X| |X| |X| |X| |
-----
|  |X| |X| |X| |X|
-----

*Please select location to move your token:
*Press 7 to move up left
*Press 9 to move up right
*Press Q to quit
Please enter your next action (case sensitive):
```

Gary pressed '9'

```
Quincy 2005

-----
| 0 | | 0 | | 0 | | 0 | |
-----
| | 0 | | 0 | | 0 | | 0 |
-----
| 0 | | 0 | | 0 | | 0 | |
-----
| | | | | | | | |
-----
| | | X | | | | | |
-----
| | | | X | | X | | X |
-----
| X | | X | | X | | X | |
-----
| | X | | X | | X | | X |
-----

Total token captured by Gary is :0
Total token captured by Mike is :0
Mike, your turn. <Token 0>

*Please select your token:
*Press 6 to move right
*Press 4 to move left
*Press 7 to move up left
*Press 9 to move up right
*Press 1 to move down right
*Press 3 to move down right
*Or press 5 to select your token
*Press Q to quit
Please enter your next action (case sensitive):_
```

```
Quincy 2005

-----
| 0 |  | 0 |  | 0 |  | 0 |  |
-----
|  | 0 |  | 0 |  | 0 |  | 0 |
-----
| 0 |  | 0 |  | 0 |  | 0 |  |
-----
|  |  |  |  |  |  |  |  |
-----
|  |  | X |  |  |  |  |  |
-----
|  |  |  | X |  | X |  | X |
-----
| X |  | X |  | X |  | X |  |
-----
|  | X |  | X |  | X |  | X |
-----

*Please select location to move your token:
*Press 1 to move down left
*Press 3 to move down right
*Press Q to quit
Please enter your next action (case sensitive):_
```

Mike pressed '5'

```
Quincy 2005
```

```
-----  
| O |   | O |   | O |   | O |   |  
-----  
|   | O |   | O |   | O |   | O |  
-----  
| O |   | O |   | O |   |   |   |  
-----  
|   |   |   |   |   | O |   |   |  
-----  
|   | X |   |   |   |   |   |   |  
-----  
|   |   | X |   | X |   | X |   |  
-----  
| X |   | X |   | X |   | X |   |  
-----  
|   | X |   | X |   | X |   | X |  
-----  
  
Total token captured by Gary is :0  
Total token captured by Mike is :0  
Gary, your turn. <Token X>  
  
*Please select your token:  
*Press 6 to move right  
*Press 4 to move left  
*Press 7 to move up left  
*Press 9 to move up right  
*Press 1 to move down right  
*Press 3 to move down left  
*Or press 5 to select your token  
*Press Q to quit  
Please enter your next action <case sensitive>:
```

Mike pressed '1'

Assignment Requirements

This assignment must be written in C

- Your code must have appropriate comments including your name and student number, the name of the .c file, the purpose of the program, brief explanations of variables and explanations of any code, which is not obvious to another programmer.
- Include a block (multiline) comment summarising the input, output and local variables used in your program.
- Include a block comment stating any equations, and test data.

Submission requirements for tasks:

1. Project report: Write a short report, which illustrates your program design (algorithm or flowchart, identification of variables, constants), short explanation of your program and include evidence of testing – screen shots. You are also to include the task assigned to each member.
2. Working solutions (.c and .txt)
3. To be submitted by the team leader

Plagiarism

The submitted assignment must be Teamwork, and any parts that are not created by you must be properly referenced. Plagiarism is treated very seriously at Department of AI and DS, Coimbatore Institute of Technology. It includes submitting the code and/or text copied from other students, the Internet or other resources without proper references. Allowing others to copy your work is also plagiarism. Please note that you should always create your coding even if you have very similar ideas with other students.