TEC | Tecnológico de Costa Rica

# Knight's Tour

## User Manual

**Sebastián M. Chen Cerdas**
**Valerie M. Hernández Fernández**
**Oscar M. Soto Varela**

**Costa Rica Institute of Technology**
**Cartago Central Technology Campus**
**Computer Engineering Academic Area**

**CE 3104 Languages, Compilers, and Interpreters**
**Eng. Marco Rivera Meneses, MGP**
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# User Manual

To correctly run the program for the Knight's Tour Problem you need to meet some hardware and software requirements shown in this section.

**Hardware Requirements**: To run this program you need at least 128Mb of RAM and 1.5Mb of storage on the device that you are using.

**Software Requirements**: This program is made 100% on the Racket programming language, so to run it you need an environment where this language can run, it can be Dr. Racket as the main editor for the language or Visual Studio Code with the respective extensions installed, another software requirement would be to run the program in windows 10 (there is no guarantee that it would run correctly in other OS)

# Running the program

After downloading and extracting the source code from the GitHub repository (https://github.com/valeriehernandez-7/Knights-Tour.git) you have to go to the src\app directory and open the "kt_algorithm.rkt" file in the selected environment.

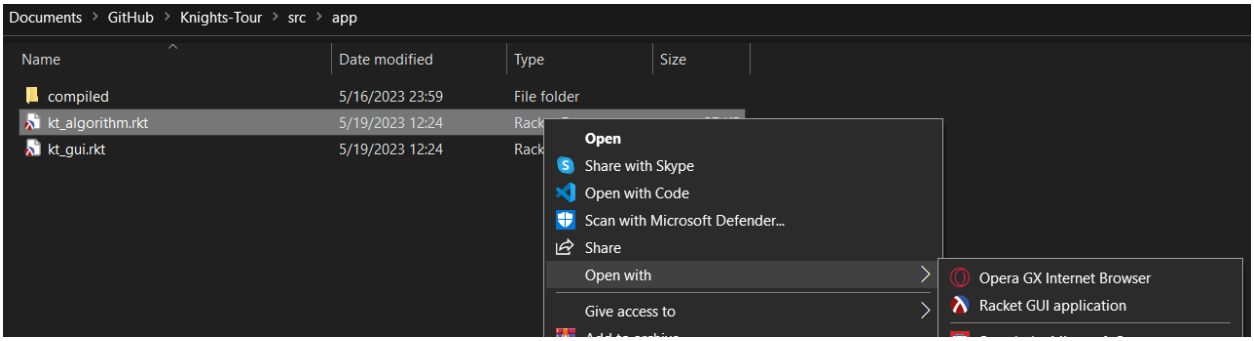


Image 1. Loading the program in the environment.

After Dr.Racket finishes loading you can click the green run button that's placed on the top right of the window to run the code.

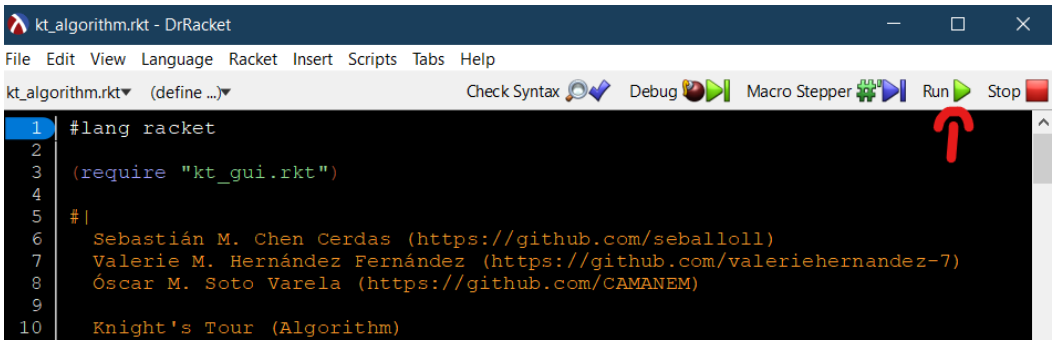


Image 2. Running the program.

Clicking the run button should open a terminal on the bottom of the window where you can enter text.

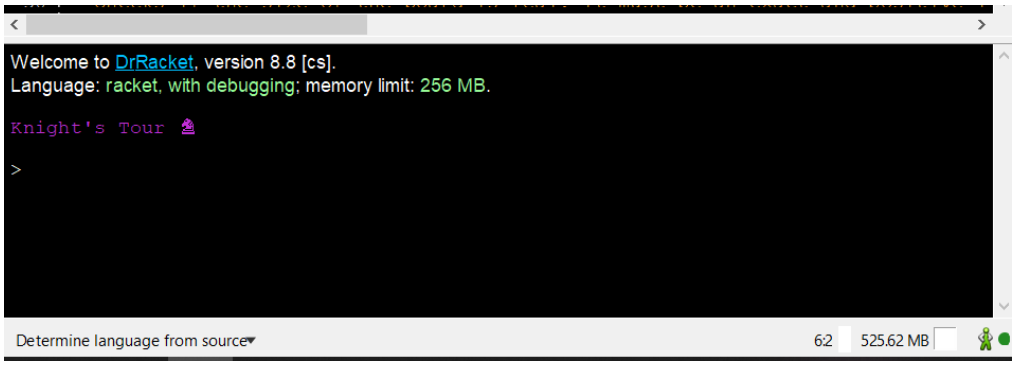


Image 3. Terminal available after running the program.

In this terminal you can call all the functions of the program, lets start with running the graphic interface, inside the terminal write “(paint)”

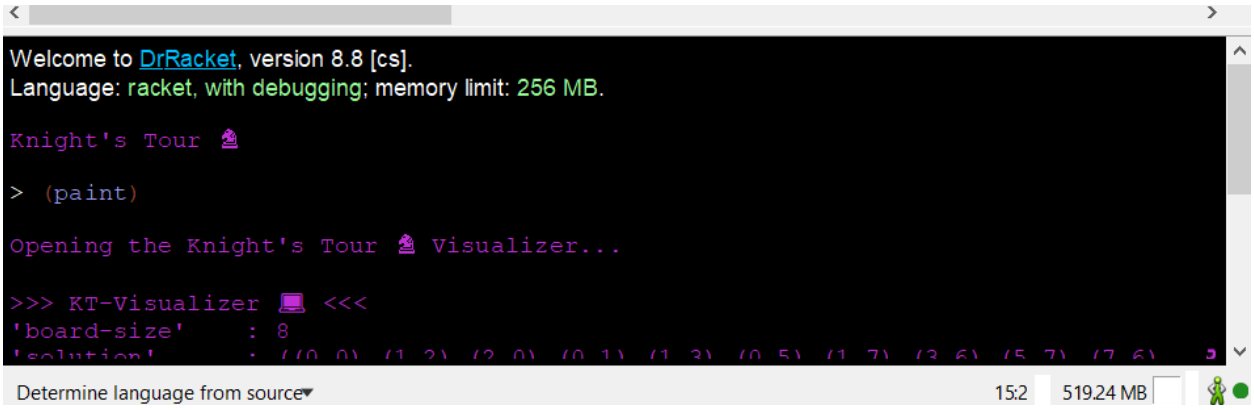


Image 4. Starting the graphic interface.

It should open another window with a default case for the knight's tour problem with a board size of 8 and starting from the position (0,0) loaded in.

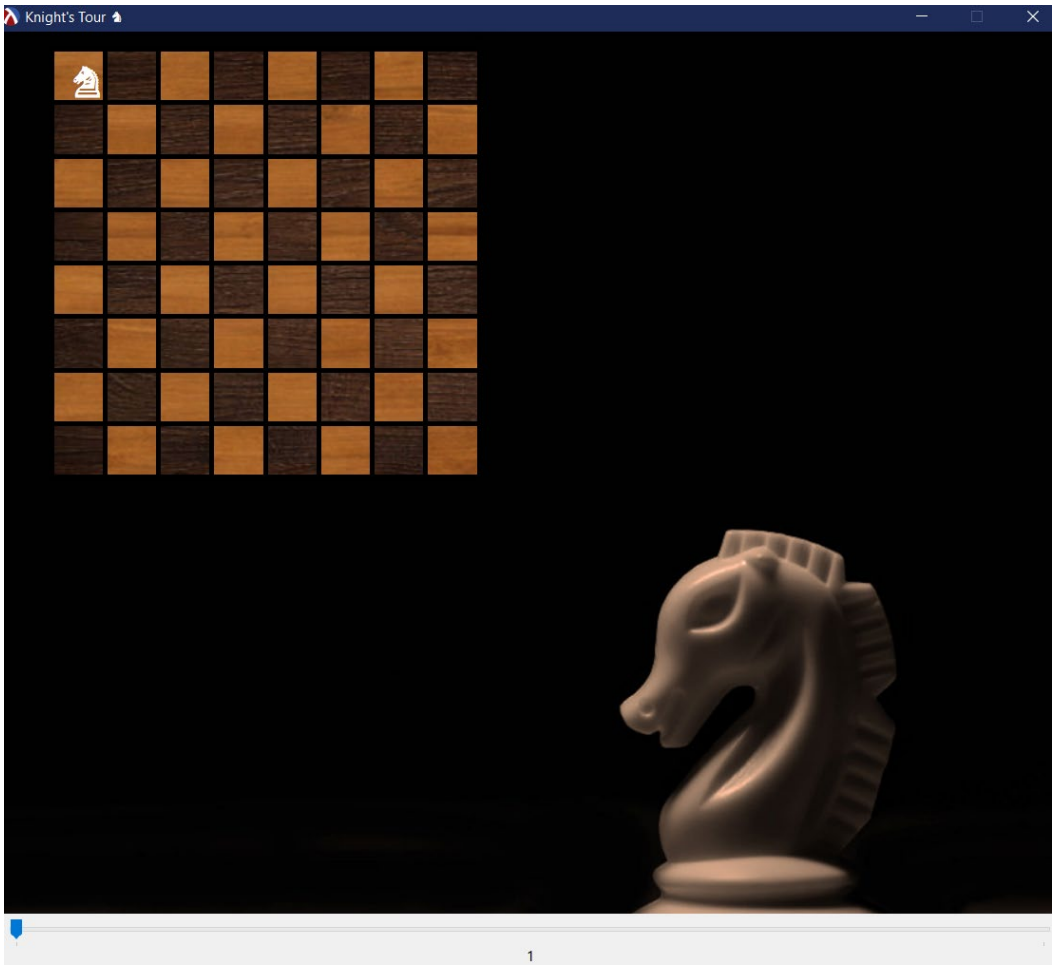


Image 4. Graphic interface for the knight's tour problem.

To visualize the movements of the knight on the board you can use the slider on the bottom of the window, while you slide it to the right the horse on the board should start moving and leave the movement number on the square it visited.

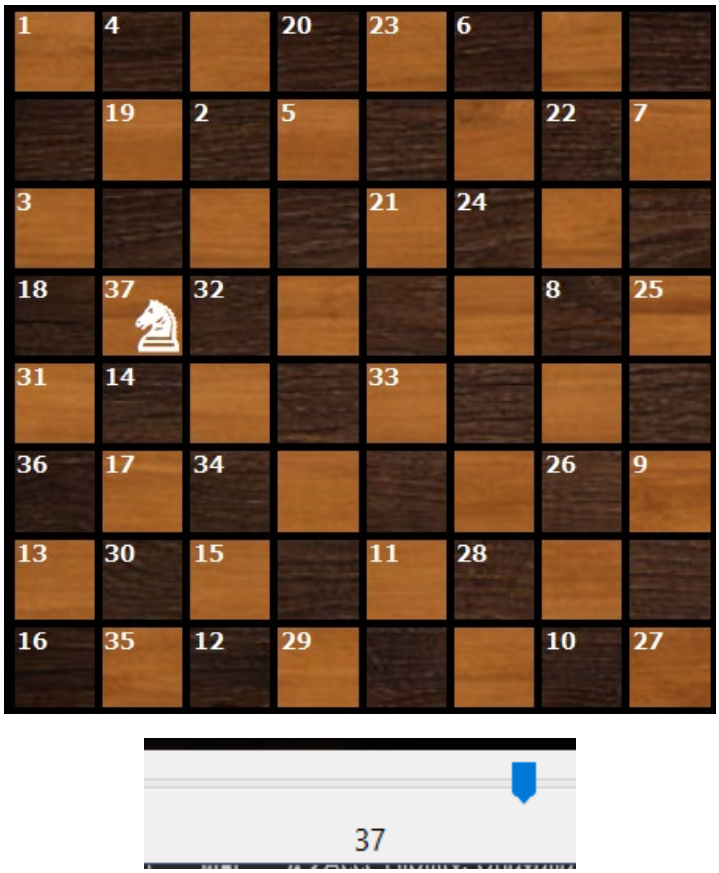


Image 5. Knight's movement across the board through the slider.

## Other functions of the program

This program also supports the creation of solutions to the knight's tour problem, to create them you need to use the same terminal as the one used to call the graphic interface (Image 3) but calling a different function, in this case (solution) with the arguments: **(solution [board size] [initial position])**

```
> (solution 5 '(2 4))
'((2 4)
  (0 3)
  (1 1)
  (3 0)
  (4 2)
  (3 4)
```

Image 6. Creating a solution through the terminal.

Next you can make n solutions for a board with the function (solutions) with the arguments: **(solutions [n-solutions] [board size] [initial position])**

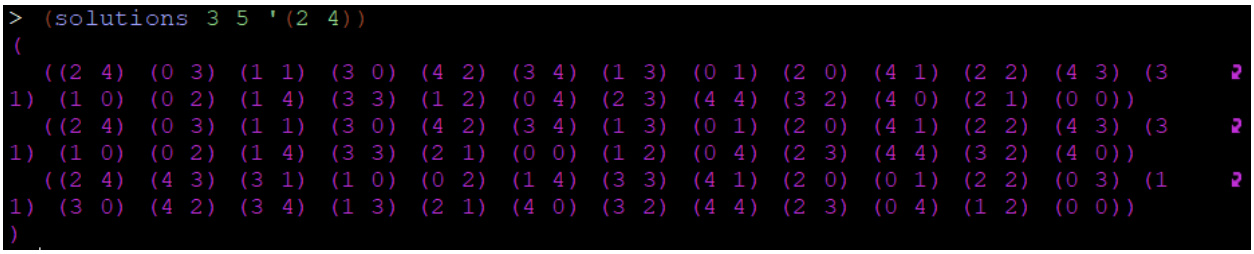


Image 7. Creating 3 solutions for the same board and start.

And the last function that can be called from the terminal is (test) this function transforms a solution into a matrix and prints the terminal with it you can call it with the arguments: **(test [board size] [solution])**

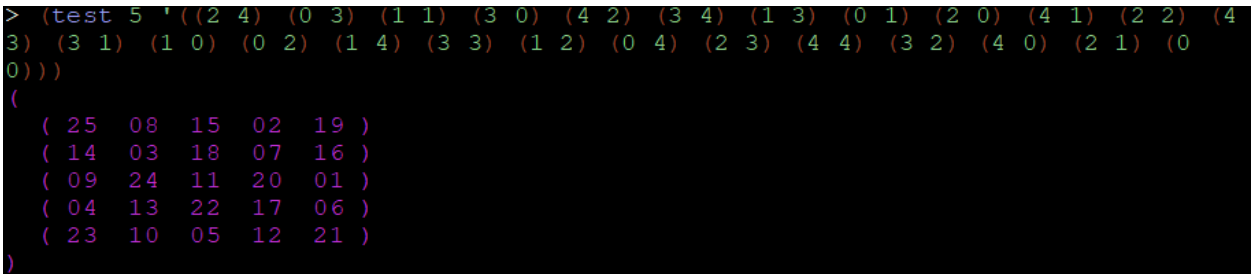


Image 8. Matrix generated by test on the terminal.

## Note

If you need to know more about each function, you can go to this project documentation to see more details.