Technical University of Košice
Department of Computers and Informatics

Problem Set 6

Froggy Frog

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Assignment

Using the ncurses library, create a program (game, presentation or other artistic work), with

the following minimal requirements:

- Project contains 2D world.
- Project meets at least 3 challenges:

– Work with colors

– Keyboard control (no Enter needed)

– Multiple levels

– Work with the time (the program changes with time)

– Work with command-line arguments

– Work with files

- Project must be more complicated than the sample programs, with an adequate level of difficulty.

Program design

The code consists of 10 functions:

- void draw_logo () – displays the title of the game
- init_menu () – creates the starting menu
- void show_credits () – displays credits
- int init_levels () – creates the menu with the available levels
- void init_lvl1 (int, int) – initializes 1st level of the game
- void init_lvl2 (int, int) – initializes the 2nd level of the game
- void init_lvl3 (int, int) – initializes the 3rd level of the game
- void init_endless (int, int) – starts an endless level
- void print_in_middle (WINDOW *, int, int, int, char *, chtype) – used throughout the entire program to easily put captions in the middle of the line
- void print_message(int, int, char *, chtype) – prints a one-line message in the middle of the screen

draw_logo() is used purely as a stylistic choice, it serves no practical purpose and the game functions perfectly without it

The environment is set up with a number of arrays, each of which contains some information:

- char ghosts[lines-8] is used to store information about the rows, they may contain ‘w’ – water, ‘ ‘ – nothing, ‘@’ – a bird or ‘b’ – a barrier
- int cords[lines-8] – stores the coordinates of every bird on the map

- int colors[lines-8] – stores the randomized indexes of colors for the birds
- char water[lines-8][cols] – stores the information about where the branches are in the rivers and about the barriers
- char stream[lines-8] – contains the directions, in which the rivers run
- char dir[lines-8] – contains the randomized direction of each bird

Some useful variables are:

- x and y – determine the position of the frog on the field
- burrowx – horizontal position of the burrow, vertical position is always LINES-3

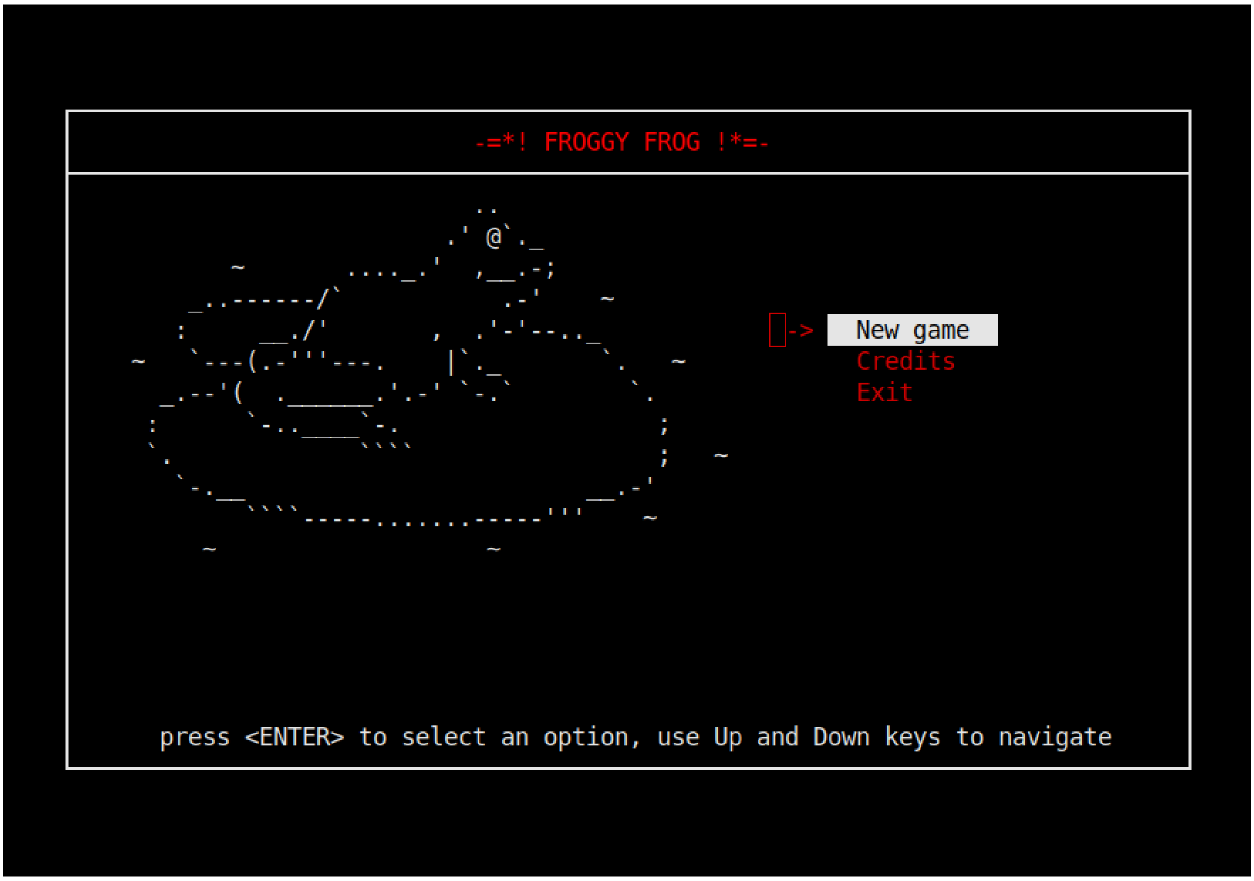
Both menus are additionally made with the menu.h library. The Git repository also contains a Makefile.

Game loop uses usleep() for smooth animation and each of the keys responsible for movement utilizes flushinp() to manage the input from the player and make the performance smoother. Game loop also changes the position of the ghosts with time, updates the rivers and keeps up with the distance (and combo in endless mode).

Game play and game logic

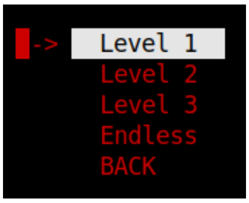
The entire game is coded inside the program.c file. It is vaguely inspired by a famous “Frogger” game, and to win each level you have to get to the bottom of the field and reach your “burrow”.

Starting menu

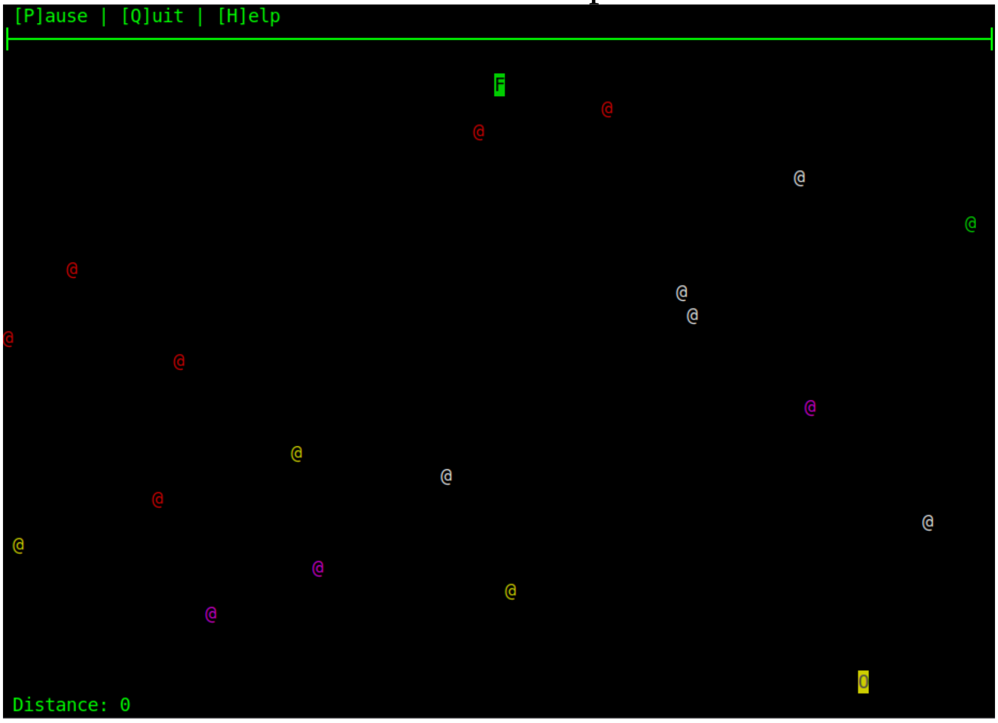


```
press <ENTER> to select an option, use Up and Down keys to navigate
```

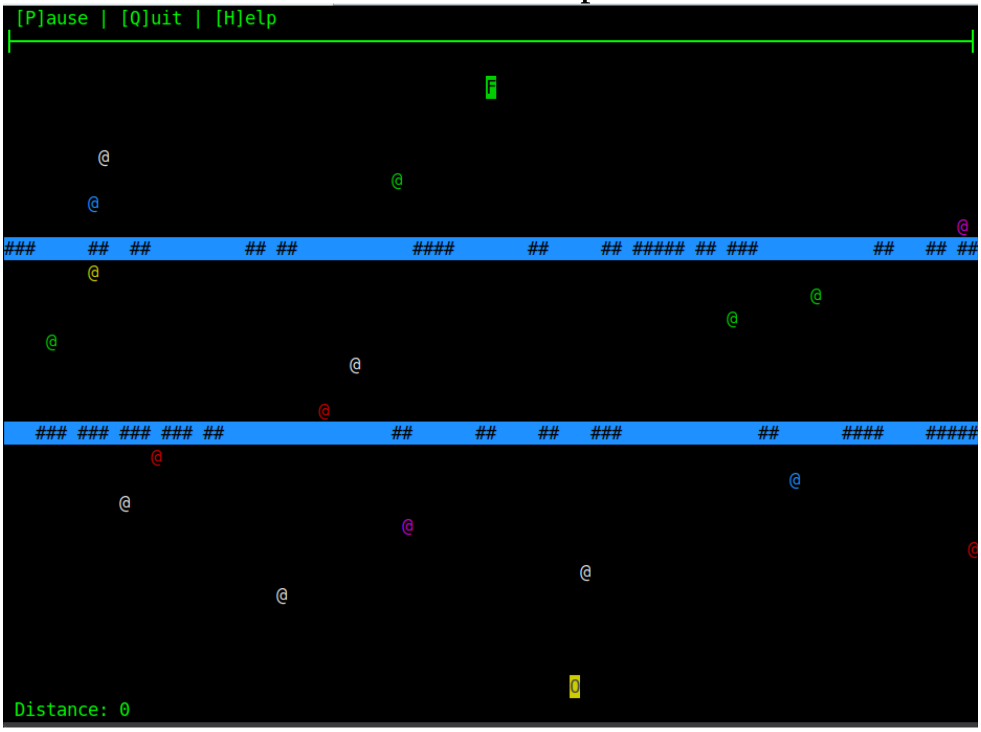
Level options



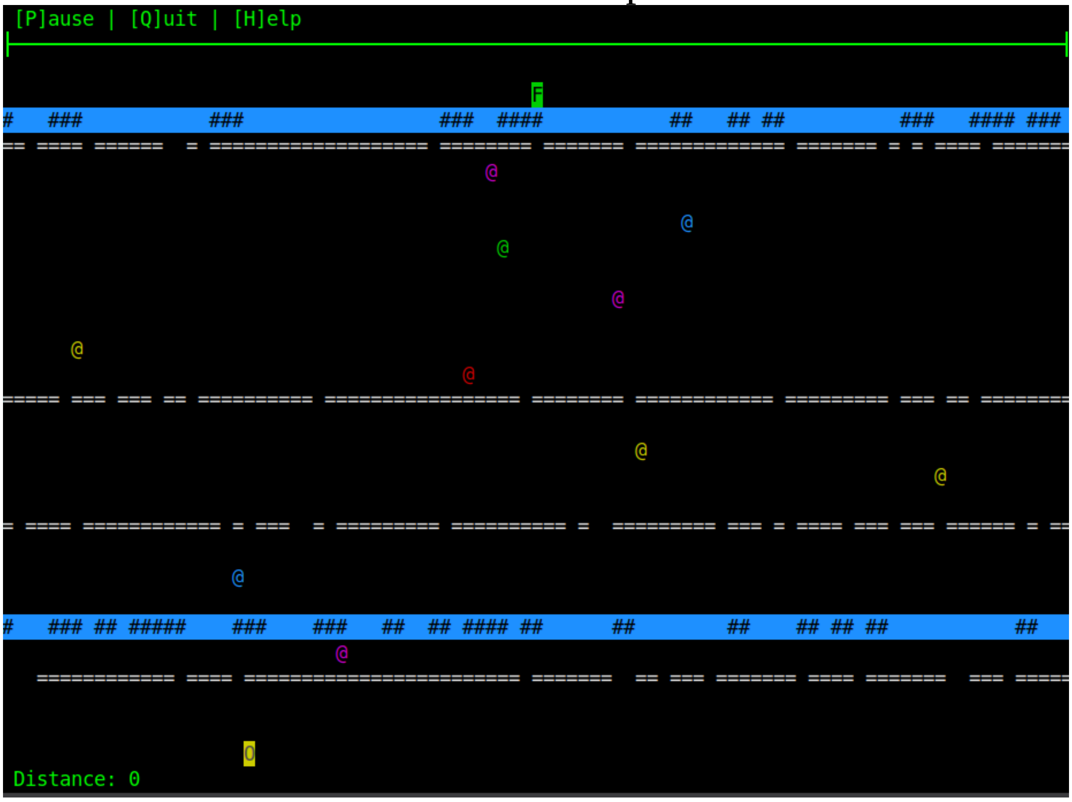
Level 1 example



Level 2 example



Level 3 example



```
[P]ause | [Q]uit | [H]elp
```

```
Distance: 0
```

Each level is randomly generated, meaning that birds, barriers and rivers are never in the same place.

The game also has an endless mode, where it randomly picks one of the existing levels, and continues until the player dies. In endless mode the generation of the world slightly changes after the 10th and 20th combo, making it so that the obstacles are generated a little bit more often.

After each play on “Endless” mode the game writes down your score, date and time into a separate “endless.txt”.

Conclusion

There are several ways to loose the game: you can be eaten by a bird, drown or be taken away by the current of the river outside of the map.

Potentially it is possible to program a difficulty changer and add, for example, points to collect.