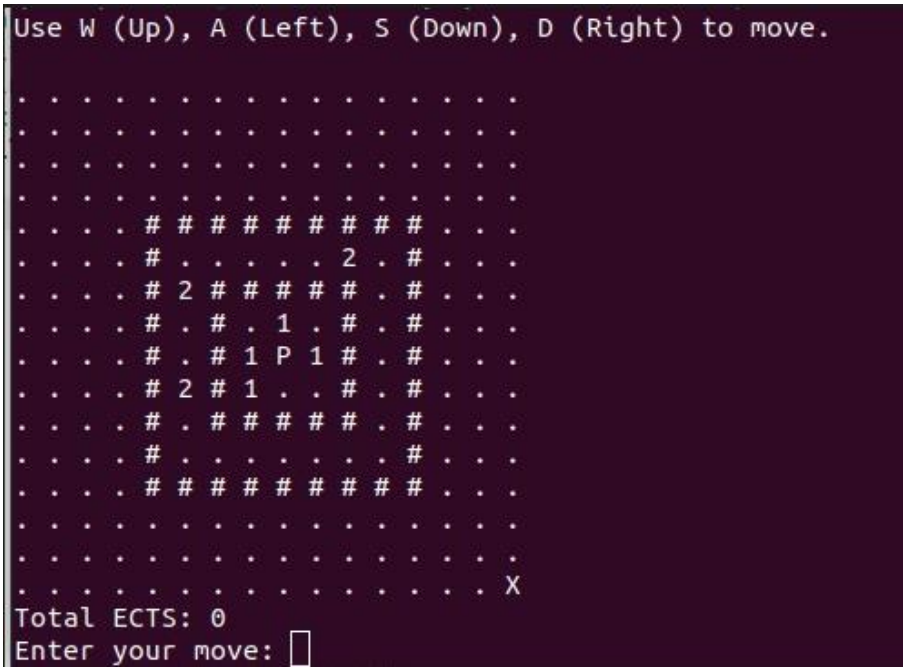
# CSE 102 Spring 2024 – Computer Programming Assignment 3

## Due on March 20, 2024 at 23:59

Create a 16x16 board and place the object “P” representing the student at the exact center. Design two square-shaped wall surrounding the student and preventing passage when the appropriate conditions are not met. These walls should be in the shape of 2 squares as shown in the figure and represent respectively the first grade and the second grade. The game screen should like the image below.




There should be 4 randomly positioned “1 ” objects in the space before the first wall and at least 3 randomly positioned “2” objects in the space between first and second walls. The “1 ” objects represent the courses that the student needs to take in the first grade, "2" objects represent the courses second grade.

The student should be able to move up, down, left, and right to collect these courses. When the student reaches the location of a course, the course object should disappear, and the student's total ECTS should increase by 8 points.

If the student attempts to pass the first year walls without collecting the required 32 ECTS, he/she should see a warning stating that he/she has not collected enough ECTS and his/her position should not change.
When the student collects enough ECTS for the first year, which is at least 32 points, he/she should be able to pass through the first wall. After passing the first wall, if they haven't accumulated the required minimum of 24 points for the second year, they should not be able to

pass through the second wall. To accumulate enough ECTS, they need to collect '2' objects, each worth 8 points. Once they have accumulated enough ECTS, they should be able to pass through the second wall and reach the X located in the bottom right corner.
Upon reaching the X, the total ECTS value and the total number of movements should be displayed on the screen, and the game should end.

To write this code, it is necessary to have the following functions called from the main function:
void initialize_game(),
void print_board(),
void move_player(char direction).
The initialize_game() function should contain parameters that determine the size of the game board and ensure the random distribution of objects representing the courses on the game board.
The print_board() function should display '.' for empty spaces, '#' for walls, '1' for first-year courses, and '2' for second-year courses to represent different elements on the game board.
The move_player(char direction) function should take only a char variable and should be configured to represent directions without distinguishing between uppercase and lowercase letters, where 'a' represents left, 's' represents down, 'd' represents right, and 'w' represents up.

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IMPORTANT NOTES:

- Submit your homework as a zip file named as your student id (StudentName_Surname.zip) and this file should include:
  - Name_Surname.c file
  - A pdf file named " Name_Surname.pdf" including a YouTube link and screenshots of your program outputs. In the video, you are expected to provide a demo of your assignment. For each requested functionality, you must explicitly explain your solution approach and also execute and display the outputs. The video should not exceed 4 minutes. Please ensure that your camera is turned on during the recording.
- Do not use any library other than stdio.h., stdlib.h, time.h
- Do not use 2d Array, you can only use 1d array.
- If the player tries to cross the wall without providing sufficient ECTS, a warning message should appear on the screen.
- Compile your work with given command “gcc --ansi your_program.c -o your_program”.
- Your work will be evaluated using gcc version 11.4.0.
- For any questions and problems, you can always contact me **via email** (ferdaabbasoglu@gtu.edu.tr), or you can find me in Room 119 during scheduled office hours on March 12 and March 19, 2024, between 13:30 and 14:30.