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HW5 Report

The progam has 1 base class beside that 3 derived class .In based class there is one inner class named cell that holds the cell type for acces that setters getters etc.In public part of the class ,there are 8 virtual function 2 of them are final .In protected part there are x and y variables those hold size of the games board and one 2D cells object vector that correspond the games board and the point variable will be returned as score.3 Derived class those corresponds 3 different games each one has the same functions and beside that their own constructures those constructures fills base classes constructure.

to explain each classes functions one by one.For pegsolitaire initialize function initilaize the board as type 2 board first reserve the cells vector and puts the corresponds int variables via setters into it 0 represents empty 1 represents pegs and 2 represents wals. Second function is print function search all the elements of cells vectors 0 :: y, 0::x and if the elements 1 prints P , prints . for wals and _ for empty elemets also prints the coordinates top end left edge of the board the to understand coordinates.playAuto function ,there is two type of movement one by user the other by computer play auto plasys by computer takse x ,y coordinates (0-9) and directions; right(0), leftt(1),up(2),down(3) randomly via rand function in while loop while loop keep run until the movement possible that will be controlled by check_movement function that function return false if the movement is not possible otherwise return true .eventually possible movement found by program sends coorfinates x y variables and direction variables to move function for pegsolitaire move function, finds the location of the elemnts to move change its variables to 0 that means empty then then change the variables the location to move reagrding direction for example if its right the location on x +2 coordinate and alos make (0) empty between those two location .After the movement decreases the value of point since we enclose the end of the game.Another function playUser takes a string as parametre divides the string two substring by '-' char one for location one for coordinate then converts them to lower case then check if they ar valid or not to provide that user must enter y location x location letter – char and the direction one by one ex 2b-down other inputs can not be operated if the string valid then converts sub strings to valid int codes to send them to check_movement functions to control if the movement possible regarding the functions return prints error message or apply the movement.endGame functions are different for all the games.For pegsolitaire game via three dimentional nested loop x,y,direction test all the movements by sending check_movement function there are valid movement still increment counter by 1 then if counter is not equal to zero there is still possible movement returns false if the counter ewual to zero thats mean there is no possible movement left returns true.

EightPuzzle class has the same functions with pegsolitaire however there is dinstictions abaout implementations some of them .The initialization function set randomly rand function create numbers between 0 to 9 and check the numbers if the number taken before by sending include function if its not puts it cells vector as variable.print function like pegsolitaire search cells vectors variables via nested loop and prints variables(1-8) and coordinate codes to top and left edges.likes pegsolitaire game play auto create random x coordinate y coordinate direction int numbers send them check_movement function until the movement possible finally move the board .In eight puzzle move function exchanger the values the curren location and desired move location firs assigns the value to temp then takes the value of move location then assign the temp to move location.Play user with string parametre exactly same as pegsolitaire .board score for eight puzzle decrease the point variable how the board similiar to finished board that 0A coordinates will be 1 ,0B coordinates will be 2 .. if the game finished the score will be 0 .If there any matching element with finished board the

point will be 8 thats mean worse point.For eightPuzzle game endGame function checks all the variables of cell if the variables lower the next index of them increments the counter if the counter is equal to 7 the game is finished.

Lastly the klitsko function ,initialize function assign variables as figures those figures represented by numbers there are 10 different type number and figure .0 represent big square 1 ,8 represent yellow rectangle ex.In print function prints the pixels as $ char and colorise them regarding the figüre type

Also if the figüre is rectangle also colorised around you can understand difference between rectangle and square in that way.pixels are figüres peaces big square has 4 pixel rectangle has 2 etc.

playAuto function like precv games take the figüre number direction and step number that 1 or 2 possible sends it to check_movement function ,this function somehow complicates from prev games

because checking different for different figures ex the figüre is vertical rectangle to move downside one step only look the bottom pixel if its fit or not as prev games to move from one location to another move location must be empty but for this rectangles only the bottom pixel will check if the movement possible or not another ex horizontal rectangle check for rightside pixel only when the direction is right.user input in klotski game must be like yr-r1 thats mean yellow rectangle right 1 step.other commands can not be operated.

Final functions for playing games until the ends playAutoAll calls playauto until the end or the move number reached 100 if the game is not finşshed in 100 step print couldnt solve message .

In main function tests functions in menü part.Takes game type first then ask for operation

At the end of the code writes score board type and the game finished or not.