**The Final Project in OOP**

**SAVE THE KING**

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**﻿הסבר כללי:**

In this exercise we will again exercise the game King the Save that we practiced in Exercise 2. The main differences are that this time

We will use inheritance and polymorphism as well as use the SFML graphic library.

Since Exercise 2 we have learned new topics and progressed in general in object-oriented programming, now we can design a better high school,

More beautiful and more efficient of the application in accordance with the principles of object-oriented programming.

We will also add more features compared to what we did in Exercise 2.

**תיכון (design)**

**●The king.**

As mentioned, the object of the game is to bring the king to the throne. The king can go on

Empty tiles, on tiles that have a key (but do not pick it up), enter the teleport booth

Move with its help) This is a special tile, which can be moved with its help to another place, as will be explained below (

Or of course settle on the throne. The King is represented in the game board by the letter K (for King.)

**● The Wizard.**

The wizard's special ability is to put out a fire. The sorcerer can walk on tiles

Empty, on fire tiles) so he turns it off, and the tile becomes an empty tile (, tiles that have

Key) but do not take it (, and it can stand on a teleport cell) but do not pass with its help!

The Wizard is represented in the game board by the letter M (for Mage.)

**● The warrior.**

The warrior's special ability is to fight the orcs. He always wins :(. The warrior can

Go for empty tiles and ones that have orcs) so the player actually makes him fight

In them, and as stated, win (also he can enter a teleport cell) and pass with his help (and he can

Stand on tiles that have a key (but do not pick it up). When the warrior kills the orc, he falls

From it a key) that is, the tile turns from one that has an orc on it to one that has a key (. The warrior

Represented by the letter W (for Warrior.)

**● The thief.**

The thief's special ability is to take a key that appears on the board when the fighter kills an orc (

And open a gate with its help. One key to one gate, without any uniqueness) i.e. each key is developed

Each gate (. The next gate will need an additional key. The thief can carry only one key at most.

If he already carries one key, he can not take another key. The thief can walk on tiles

Empty, on tiles that have a key, enter a teleport cell) and pass with its help (and enter

To a gate tile if it has a key) and so he uses the key and opens it: turns the tile

The gate to an empty tile (. The thief is represented by the letter T (for Thief.)

Empty tile. A tile that has no object or figure in it, is represented by a space.

**● Wall.**

No character can cross a wall. Represented by =.

**● scissors.**

As stated, the thief can open the gate) the tile will become empty when he enters it, if It has a key (. Any other character can not pass through it. Represented by #.

**● Fire.**

As stated, the sorcerer can put out the fire (the tile will become empty when he enters it). Another character can not pass through such a tile. Represented by \*) with enough imagination it looks like

Drawing of fire from above.

**● Orc.**

This legendary monster blocks all the characters) they can not pass through the tile that Ork

Stands on it (until the warrior comes and kills it) as he enters this tile (then "falls to the orc"

Key from the pocket) Do the orcs even have pockets? Well, well, in the game let's say yes (, i.e. the tile becomes

For one that has a key on it. Luckily for us, the orcs in the game are lazy and do not move. The orc is represented

By ! Looks like the goddess he used to carry.

**● Key.**

If you have not noticed yet ... the key falls from the orc when the warrior kills it, then the thief

Can take it and use it to open the gate. No other character can take the

The key besides the thief. The key is represented by an F (looks a bit like a key).

**● Teleport cell.**

A type of tile that always comes in pairs) meaning that at each stage only an even number of will appear

Tiles of this type: 0, 2, 4, etc. There will never be a stage with an odd number of tiles of this type

This: 1, 3, 5, etc. (each character) except the sorcerer (who enters the teleport booth, launches immediately

To a parallel teleport cell. That is, the character "disappears" from the cell in which she entered, and she "appears"

In another teleport cell or next to another teleport cell) you will choose whether the transition will be into the cell

The other, or next to the other cell (. The cell in which the character appears, will in fact be considered a "mate" of the cell

the first one. As mentioned, the wizard will not launch at the teleport, but that does not stop him from getting into such a tile.

There may be more than one pair of teleport cells on the game board, but each pair only works between them

Itself regularly, it is not possible for a particular cell to move once to that cell and once to that cell. cellular

The teleport is marked with an X. Even if there is more than one pair, there is no need to mark who is linked to whom.

**● The throne.**

Well, that's the goal, isn 't it? Only the king can enter the tile that contains the throne,Thus the player completes the stage. Marked with @.

**●Dwarfs.**

We will add characters that randomly roam the board and block the player's characters, meaning the player's characters do not

Can go through them. Their marking in the step file is ^) 6 + Shift, reminiscent of the pointed hat they usually wear (.

**●Gifts.**

Another addition is the "gifts" scattered throughout the stage. The player collects the gift by "stepping" on it with one help

From the characters. The types of gifts you are required to redeem are:

1. Increasing the allotted time (assuming that there is a time limit at this stage).

2. Reducing the allotted time (assuming it is relevant, ibid.)

3. Remove all dwarfs from the current stage

It is up to you to choose whether the extensions are pre-set or random. The dwarves can pass where there is a gift, but they Of course can not take her.

**.פורמט קובץ הקלט.**

**רשימה של הקבצים.**

Controller

That manage the game , which mange the window and display the start game and the end game and read input from the user

The Board

That’s hold the main data structures , and its lodding the file (The game file)

And reading its , in board we reach to sfml and uploading the photo from the file to the game

The ToolBar

That hold the printing on the screen and updating the data during the game .

Menu

For display the background images and photos during the game

Objects

It’s the basic class in the program that have all class

StaticObjects

The static objects that cant move are in the class here

Its include there postion and the excute for them

MobileObjects

The Mobile objects that move are in the class here its include there postion

And also we have the king and thief and warrior and mage and the orge and all of these objects are in the mobile objects .

All of these objects have the collisons betewn the objects to all the other objects.

And we have the Throne and the wall and the key and the Gate and the Gifts and the Orc and the Fire , and its all in the class static objects

All of these objects have the collisons between the objects to all the other objcets .

And the end we have the gift class wich have a three kinds of gifts

1. Add time
2. Reduse time
3. Remove dwarfs

﻿**באגים**

NO

**הערות**

The gifts I put them just like all the objects and I gave to them the character ‘G’