My Project

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Chapter 1

Main Page

Simulation of Zombie apocalypse.

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Chapter 2

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Projekt jest symulacją apokalipsy zombie. Symulacja opiera się na obiektach reprezentujących kraje. W każdym kraju znajdują się ludzie, na których własne statystyki mają wpływ także czynniki kraju (mocno uproszczone do siły, zręczności obywateli oraz środowiska, czy sprzyja wirusowi czy nie). Co kilka tur wirus rozprzestrzenia się sam z siebie zarażając kolejną osobę. W każdej turze - odpowiednik dnia - dochodzi do starcia między człowiekiem i zombie. Gdy wygrywa człowiek, zombie umiera, zaś gdy wygrywa zombie - zamienia tego człowieka w zombie.

Zombie mają tu pewną przewagę, tym bardziej że nie zadają obrażeń, więc jeśli kogoś zamienią to ma on 100% HP, jednak w zamian mają dużą mniejszą szansę na trafienie (wygranie). Ludzi podzieliłem na trzy rodzaje: przeciętnych, wojskowych (lepsze statystyki ataków) oraz naukowców (są bezbronni, ich jedynym zadaniem jest praca nad lekiem). Zombie także dzielą się na trzy rodzaje: przeciętne, berserk (wyprowadza kilka ciosów naraz co daje mu większą szansę na zwycięstwo - odpowiednik wojskowych) oraz kamikaze (znikoma szansa na wygranie, ale po śmierci "wybuchają" zarażając kilka osób z otoczenia).

Szukanie leku opiera się na losowaniu naukowców, którzy jeśli będą mieć szczęście, poczynią postępy w badaniach, odejmując od (sztywno ustalonego pułapu) 10 000 pkt ilość punktów odpowiadającej ich inteligencji. Gdy wartość badań osiągnie 0, to lek jest gotowy. Wtedy lek z szansą 50/50 jest co turę rozpylany i ma szanse uleczyć kilka zombie naraz. Poprzez uleczenie rozumiem przywrócenie ich do ludzkiej postaci, jednak tylko do postaci przeciętnej (upraszam w ten sposób element trwania leczenia, osłabienie itd).

Symulacja będzie przyjmować dane wejściowe: n oznaczające ilość krajów w symulacji oraz: populację, liczbę naukowców, liczbę żołnierzy, liczbę zombie.

populacja = przeciętni + naukowcy + żołnierze + zombie

Aby łatwiej było podać większe ilości danych wejściowych, wszystkie liczby poza n będą wczytywane z pliku .txt, którego nazwy nie będize trzeba podawać. Wystarczy samo n.

Chapter 3

Hierarchical Index

3.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 4

Class Index

4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 5

File Index

5.1 File List

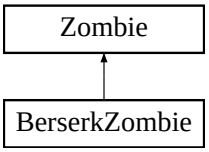
Here is a list of all documented files with brief descriptions:

Chapter 6

Class Documentation

6.1 BerserkZombie Class Reference

Inheritance diagram for BerserkZombie:



Public Member Functions

- BerserkZombie ()

  Creates new BerserkZombie, it has better _attackChance because it can strike few times.
- int attackChance ()

  returns Zombie _attackChance (10%-19%)
- int attackCount ()

  returns Zombie _attackCount (1-3)
- virtual int who ()

  returns Zombie type
- virtual bool tryAttack ()

  returns info if attack was successful
- virtual string description ()

  write some info about Zombie in output.txt

Private Attributes

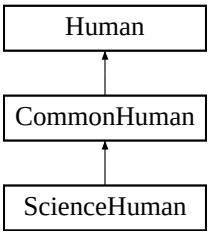
- int **_attackChance**
- int **_attackCount**

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Zombie.h
- D:/Programowanie/virus2/Zombie.cpp

6.2 CommonHuman Class Reference

Inheritance diagram for CommonHuman:



Public Member Functions

- CommonHuman ()

  Creates new CommonHuman with some random parameters.
- int attack ()

  returns Human _attack (30-39)
- int attackChance ()

  returns Human _attackChance (50%-59%)
- int dodgeChance ()

  returns Human _dodgeChance (50%-59%)
- int intelligence ()

  Inherited, will never be called.
- virtual int who ()

  returns Human type
- virtual string description ()

  writes info about Human in output.txt

Private Attributes

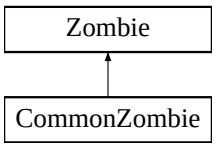
- int **_attack**
- int **_attackChance**
- int **_dodgeChance**

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Human.h
- D:/Programowanie/virus2/Human.cpp

6.3 CommonZombie Class Reference

Inheritance diagram for CommonZombie:



Public Member Functions

- CommonZombie ()

  Creates new CommonZombie with random parameters.
- int attackChance ()

  returns Zombie _attackChance (10%-29%)
- virtual int who ()

  returns Zombie type
- virtual bool tryAttack ()

  returns info if attack was successful
- virtual string description ()

  writes info about Zombie in output.txt

Private Attributes

- int **_attackChance**

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Zombie.h
- D:/Programowanie/virus2/Zombie.cpp

6.4 Country Class Reference

Public Member Functions

- Country (unsigned int population, int sl, int ml, int zl)

  Country class constructor. Creates object that contains vector of Humans an Zombies. sl - number of scientists, ml - number of soldiers zl - number of zombies sl+ml+zl=population Different types of Humans and Zombies are randomly placed in their vectors.
- int humans ()

  returns number of Humans
- int zombies ()

  returns number of Zombies
- int cure ()

  returns cure progress
- void changeHumanToZombie (std::vector< Human * >::iterator humanOpponent)

  Erase beaten Human from vector. Makes new random type Zombie.
- void fight (fstream &output, int outputInfo)

  Simulate one fight between Human and Zombie. There is 50/50 chances for Zombie first attack. If zombie hits, Human take no damage, but it is changed into Zombie. Human have higher attack chance and few of their attacks are enough to kill Zombie. If outputInfo==1 then output.txt would have much more precise info.
- void spreadVirus (int i, fstream &output)

  Once per few days (1-7) one random Human turns into random Zombie.
- bool searchForCure (fstream &output)

  Scientists try to find cure, there are 25% chances for making progress. To discover cure, they must lower _cure to 0. Every time 10% of scientists try to reduce it by their _intelligence.
- void cureSomeZombies (fstream &output)

  If cure progress is 0 - antidote is complete and every day 5-9 Zombies are cured to CommonHuman.
- string description ()

  Shows some info about Country in console or writes it into output.txt.
- string **showEveryone** ()

Private Attributes

- std::vector< Human * > **vectorOfHumans**
- std::vector< Zombie * > **vectorOfZombies**
- int _humanPower

  Humans _attack bonus depends on Country.
- int _humanAgility

  Humans _dodgechance bonus depends on Country.
- int **_scienceLevel**
- int **_militaryLevel**
- int _environment

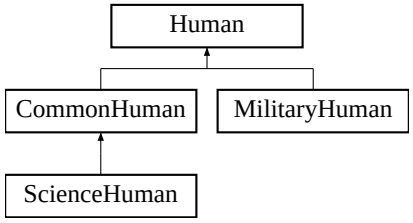
  Parameter that influence frequency of spreadvirus function.
- int **_scientists**
- int **_soldiers**
- int **_commons**
- int **_cure**

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Country.h
- D:/Programowanie/virus2/Country.cpp

6.5 Human Class Reference

Inheritance diagram for Human:



Public Member Functions

- Human ()

  Every Human has the same HP.
- int humanID ()

  returns Human ID
- int humanHP ()

  returns Human HP
- int isDead ()

  check if Human is dead
- void **damage** (int dmg)
- virtual int **attack** ()=0
- virtual int **attackChance** ()=0
- virtual int **dodgeChance** ()=0
- virtual int **intelligence** ()=0
- virtual int who ()=0

  returns 0-CommonHuman 1-ScientistHuman 2-SoldierHuman
- virtual string **description** ()=0

Private Attributes

- int **_humanID**
- int **_humanHP**

Static Private Attributes

- static int _humanCounter =1

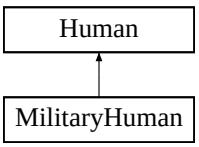
  Gives ID to new Humans.

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Human.h
- D:/Programowanie/virus2/main.cpp

6.6 MilitaryHuman Class Reference

Inheritance diagram for MilitaryHuman:



Public Member Functions

- MilitaryHuman ()

  Creates MilitaryHuman, it has better stats to fight Zombies.
- int attack ()

  returns Human _attack (50-59)
- int attackChance ()

  returns Human _attackChance (65%-74%)
- int dodgeChance ()

  returns Human _dodgeChance (65%-74%)
- int intelligence ()

  Inherited, will never be called.
- virtual int who ()

  returns Human type
- virtual string description ()

  writes info about Human in output.txt

Private Attributes

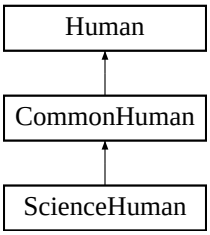
- int **_attack**
- int **_attackChance**
- int **_dodgeChance**

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Human.h
- D:/Programowanie/virus2/Human.cpp

6.7 ScienceHuman Class Reference

Inheritance diagram for ScienceHuman:



Public Member Functions

- ScienceHuman ()

  Creates new ScienceHuman with random _intelligence.
- int intelligence ()

  returns Human _intelligence
- virtual int who ()

  returns Human type
- virtual string description ()

  writes info about Human in output.txt

Private Attributes

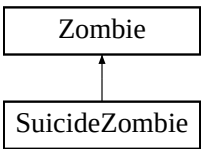
- int **_intelligence**

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Human.h
- D:/Programowanie/virus2/Human.cpp

6.8 SuicideZombie Class Reference

Inheritance diagram for SuicideZombie:



Public Member Functions

- SuicideZombie ()

  Creates new SuicideZombie, if it dies, it spread the virus to few (2-5) neighbors of Human opponent.
- int attackChance ()

  returns Zombie _attackChance (1%-4%)
- virtual int who ()

  returns Zombie type
- virtual bool tryAttack ()

  returns info if attack was successful
- virtual string description ()

  writes some info about Zombie in output.txt

Private Attributes

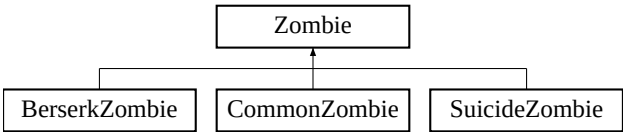
- int **_attackChance**

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Zombie.h
- D:/Programowanie/virus2/Zombie.cpp

6.9 Zombie Class Reference

Inheritance diagram for Zombie:



Public Member Functions

- Zombie ()

  Every Zombie has the same HP.
- int zombieID ()

  returns Zombie ID
- int zombieHP ()

  returns Zombie HP
- void damage (int dmg)

  damages Zombie
- bool isDead ()

  check if Zombie is dead
- virtual int **attackChance** ()=0
- virtual int who ()=0

  returns 0-CommonZombie 1-SuicideZombie 2-BerserkZombie
- virtual bool **tryAttack** ()=0
- virtual string **description** ()=0

Private Attributes

- int **_zombieID**
- int **_zombieHP**

Static Private Attributes

- static int _zombieCounter =1

  Gives ID to new Zombies.

The documentation for this class was generated from the following files:

- D:/Programowanie/virus2/Zombie.h
- D:/Programowanie/virus2/main.cpp

Chapter 7

File Documentation

7.1 D:/Programowanie/virus2/main.cpp File Reference

```
#include "Zombie.h"
#include "Human.h"
#include "Country.h"
#include <iostream>
#include <vector>
#include <cstdlib>
#include <time.h>
#include <fstream>
```

Functions

- void simulateCountry (int population, int scientists, int soldiers, int zombies, int outputInfo)

  function loops Country::fight(), Country::searchForCure(), Country::cureSomeZombies() and Country::spreadVirus() as long as there are humans() or zombies(). It adds also few info lines to output.txt and prints it in console.
- void fileLoad ()

  Loads data from input.txt that contains numbers needed in Country::Country()
- int main (int argc, char const ∗argv[ ])

  Sets srand(time(NULL)), load file, loops simulateCountry() n times (n - first console argument). Second console argument can change output.txt to more or less precise log.

Variables

- std::vector< int > **numbers**
- fstream **output**

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