

# Greenfoot Serta Busters

A Game

“This is the worst pandemic I’ve ever seen. May god  
help our planet!”

*—Johnny Appleseed, General Secretary of the UN*



# The Story

- \* Spring 2050
- \* During late Winter months a new virus break out in Miami (FL)
- \* Since the virus is highly infectious it spreads within weeks over the whole planet
- \* A team of virologists found out that only a few things help



# Typology of the Virus

- \* Fosters anger and fear
- \* Survives best in frustrated people
- \* Extremely infectious
- \* A mortality rate of over 10 %





# How to defeat the Virus

- \* Wash your hands regularly
- \* Keep distance to others
- \* Support the valiant medical and nursing people
- \* Write Greenfoot programs



# Why Greenfoot Programs

- \* As virologist found out Greenfoot programs do a severe harm to the virus because they bring joy and fun
- \* So all Governments of the planet are desperately looking for Greenfoot programmers
- \* Your mission, should you decide to accept it, is to become such a programmer





# Learn to See Sharp

- \* There is one hurdle to become a Greenfoot programmer
- \* You have to learn to See Sharp before this
- \* Knowing C# improves your immune system and prevents you from being killed by the virus but more on that later
- \* The higher levels you grow the closer you get to your goal



# How to Become a Serta Fighter

- \* Strengthen your immune system by getting vaccinations
- \* The better your immune system the better your level but ...
- \* ... the better your level
  - \* the harder the challenges
  - \* the more likely you get infected





# What to Do Against Infections

- \* Try to get drugs but they are not for free
- \* Rely on your immune system but be aware that it gets weakened with every infection



# How to Get Drugs and Vaccinations

- \* Kahoot
- \* CodeAcademy Course
- \* SoloLearn
- \* ClassMarker Tests
- \* Quizzlet Tests
- \* ChabaDoo?
- \* Automatically controlled programs





# Health Checks aka How to Change a Level

- \* Proof that your immune system is strong enough to stand the increased risk of getting infected and raise a level
- \* Get examined by a chief virologist
- \* Take care of your immune system so that you do not fall a level

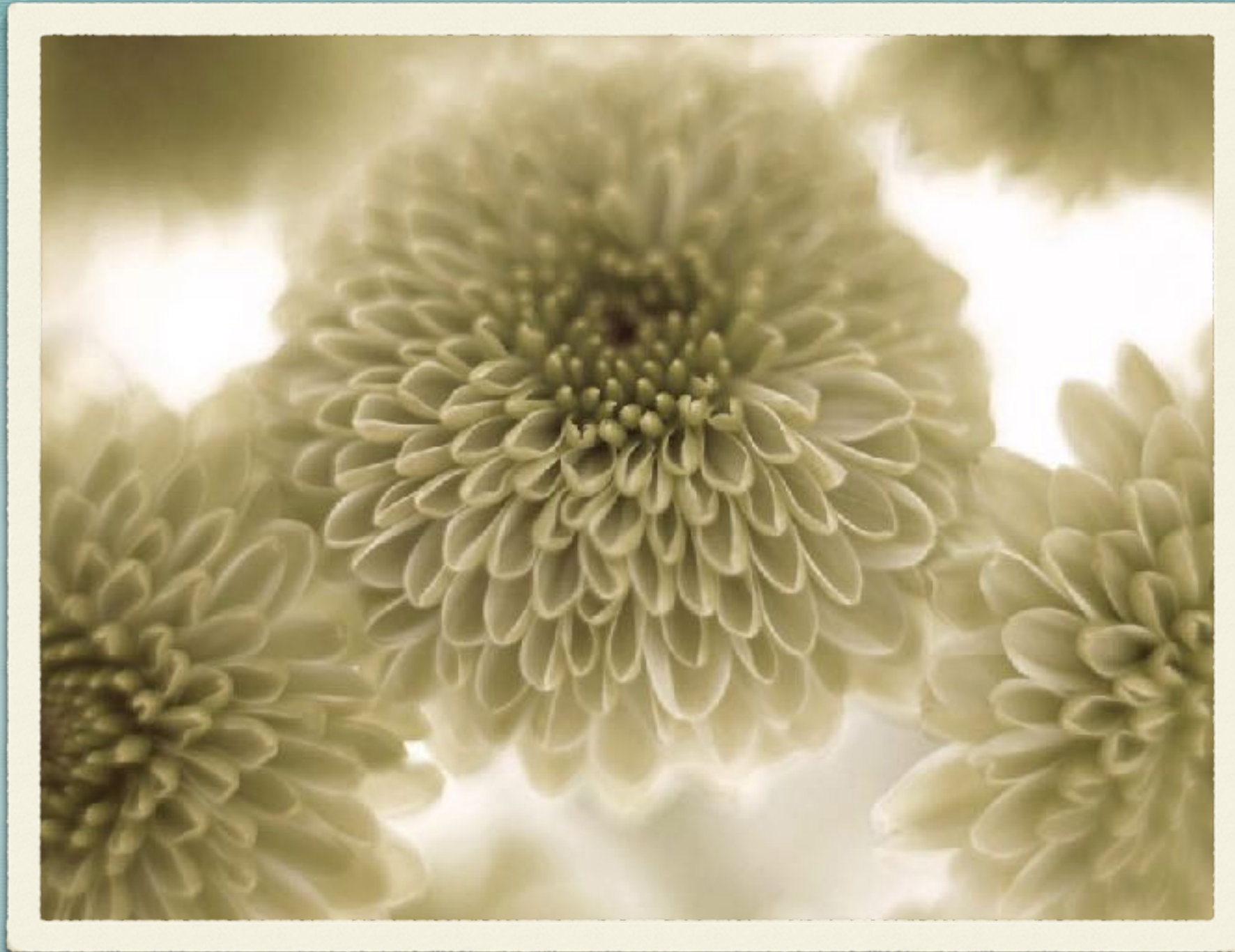


# Levels' Challenges

- \* S: Loops
- \* A: Arrays
- \* M: Methods
- \* C: Classes
- \* F: Files
- \* P: Greenfoot Serta fighter







# Implementation Details

No Player Information



# Levels Overview S – M

- \* S: Most vulnerable, immune system is helpless against sarta, but the number of infections is only a few
- \* A: Immune system stands 10 % of sarta infections but infections are getting more frequent
- \* M: Immune system gets even better but you have to help in a hospital which increases the chance of getting infected





# Levels Overview C – P

- \* C: You get locked in a city under quarantine. The rate of infections is terrible. Be quick to help others to get your infections under control
- \* F: Since you accomplished all challenges that well you become elected to the major of Miami (FL). The devastated city has to be brought back on track
- \* P: Finally you reached to become a member of the task force “Serta Fighters”. But be aware the virus is everywhere



# Do the Math

- \* Every day a virus attack is generated by the server
- \* Depending on the level a player gets infected with a certain probability
- \* In case of an infection a drug can be tried to get. Depending on the level the drugs needed become more
- \* If the player fails to get drugs his immune system is lowered by 15 %
- \* If the player gets a vaccination their immune system is raised by 3 %





# Level Data

L	Immune System	Infection Risk	Drugs Needed to Defeat
S	0 %	20 %	1
A	15 %	30 %	1
M	30 %	40 %	2
C	45 %	50 %	2
F	60 %	60 %	3
P	75 %	70 %	3

# Health Checks

- \* As soon as the player reaches the necessary immunity
- \* Health check is done via an “exam” talk
- \* If health check is ok the game level is increased
- \* If health check fails
  - \* the game level remains
  - \* the immune level is set to the middle of the current game level



# Health Checks and Immune Levels

- \* The player can improve their immune system permanently
- \* Beyond their current game level
- \* Immune levels permit them for health checks
- \* Passed health checks increase game level and preserve immune level
- \* Failed health checks preserve game level and reduce immune level

# Integration of Satellite Systems

- \* Immune system is pimped via external systems
  - \* SoloLearn, ...
- \* The score of these systems is not under our control
- \* Adapt their influence via a “correction” stored in the internal database
- \* See next example



# Example

xp	correction	immune level	game level
120	0	12	1
160	0	16	1
300	0	30	1
300	0	30	2
450	0	45	2
450	290	16	2

health-check-passed:  
game level up  
immune level remains

health-check-failed  
game level remains  
immune level adapted

# Special Challenges



# Help in Hospital

- \* Level M
- \* Small programming problems
  - \* Statistics (min, max, avg, ...)
  - \* FizzBuzz
  - \* ...
- \* Under time pressure
- \* Probability of infections even higher than in M



# First Aid in Quarantine

- \* Level C
- \* Harder problems
  - \* Balance load in caravan
  - \* Give change of coins
  - \* Other greedy stuff
- \*





# Major of Miami

\* ??

