

EECS3311 Software Design (Fall 2020)

Q&A - Project

Thursday, November 19

Acceptance Test at011

Part 1 of 8

```
state:not started, normal, ok
Welcome to Space Defender Version 2.
->play(5,17,2,2,2,2,2)
state:weapon setup, normal, ok
1:Standard (A single projectile is fired in front)
  Health:10, Energy:10, Regen:0/1, Armour:0, Vision:1, Move:1, Move Cost:1,
  Projectile Damage:70, Projectile Cost:5 (energy)
2:Spread (Three projectiles are fired in front, two going diagonal)
  Health:0, Energy:60, Regen:0/2, Armour:1, Vision:0, Move:0, Move Cost:2,
  Projectile Damage:50, Projectile Cost:10 (energy)
3:Snipe (Fast and high damage projectile, but only travels via teleporting)
  Health:0, Energy:100, Regen:0/5, Armour:0, Vision:10, Move:3, Move Cost:0,
  Projectile Damage:1000, Projectile Cost:20 (energy)
4:Rocket (Two projectiles appear behind to the sides of the Starfighter and accelerates)
  Health:10, Energy:0, Regen:10/0, Armour:2, Vision:2, Move:0, Move Cost:3,
  Projectile Damage:100, Projectile Cost:10 (health)
5:Splitter (A single mine projectile is placed in front of the Starfighter)
  Health:0, Energy:100, Regen:0/10, Armour:0, Vision:0, Move:0, Move Cost:5,
  Projectile Damage:150, Projectile Cost:70 (energy)
Weapon Selected:Standard
->toggle_debug_mode
state:weapon setup, debug, ok
In debug mode.
```

If an enemy is spawned, it must be a Grunt.

[1,2] [2,2] [2,2] [2,2] [2,2] [2,101]

G F C I P

See p.8 of instructions.

Acceptance Test at011

Part 2 of 8

```
->setup_next(5)
state:in game(0.0), debug, ok
Starfighter:
  [0,S]->health:70/70, energy:70/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[C,1]
  Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
  Power:Recall (50 energy): Teleport back to spawn.
  score:0
Enemy:
Projectile:
Friendly Projectile Action:
Enemy Projectile Action:
Starfighter Action:
Enemy Action:
Natural Enemy Spawn:
  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A - - - - - - - - - - - - - - - - -
B - - - - - - - - - - - - - - - - -
C S - - - - - - - - - - - - - - - -
D - - - - - - - - - - - - - - - - -
E - - - - - - - - - - - - - - - - -
```

Reference: See values of attributes in messages.txt

state:weapon setup, normal, ok

1:Standard (A single projectile is fired in front)

Health:10, Energy:10, Regen:0/1, Armour:0, Vision:1, Move:1, Move Cost:1,
Projectile Damage:70, Projectile Cost:5 (energy)

2:Spread (Three projectiles are fired in front, two going diagonal)

Health:0, Energy:60, Regen:0/2, Armour:1, Vision:0, Move:0, Move Cost:2,
Projectile Damage:50, Projectile Cost:10 (energy)

3:Snipe (Fast and high damage projectile, but only travels via teleporting)

Health:0, Energy:100, Regen:0/5, Armour:0, Vision:10, Move:3, Move Cost:0,
Projectile Damage:1000, Projectile Cost:20 (energy)

4:Rocket (Two projectiles appear behind to the sides of the Starfighter and accelerates)

Health:10, Energy:0, Regen:10/0, Armour:2, Vision:2, Move:0, Move Cost:3,
Projectile Damage:100, Projectile Cost:10 (health)

5:Splitter (A single mine projectile is placed in front of the Starfighter)

Health:0, Energy:100, Regen:0/10, Armour:0, Vision:0, Move:0, Move Cost:5,
Projectile Damage:150, Projectile Cost:70 (energy)

Weapon Selected:Standard

state:armour setup, normal, ok

1:None

Health:50, Energy:0, Regen:1/0, Armour:0, Vision:0, Move:1, Move Cost:0

2:Light

Health:75, Energy:0, Regen:2/0, Armour:3, Vision:0, Move:0, Move Cost:1

3:Medium

Health:100, Energy:0, Regen:3/0, Armour:5, Vision:0, Move:0, Move Cost:3

4:Heavy

Health:200, Energy:0, Regen:4/0, Armour:10, Vision:0, Move:-1, Move Cost:5

Armour Selected:None

state:engine setup, normal, ok

1:Standard

Health:10, Energy:60, Regen:0/2, Armour:1, Vision:12, Move:8, Move Cost:2

2:Light

Health:0, Energy:30, Regen:0/1, Armour:0, Vision:15, Move:10, Move Cost:1

3:Armoured

Health:50, Energy:100, Regen:0/3, Armour:3, Vision:6, Move:4, Move Cost:5

Engine Selected:Standard

state:power setup, normal, ok

1:Recall (50 energy): Teleport back to spawn.

2:Repair (50 energy): Gain 50 health, can go over max health. Health regen will not be in effect if over cap.

3:Overcharge (up to 50 health): Gain 2*health spent energy, can go over max energy. Energy regen will not be in effect if over cap.

4:Deploy Drones (100 energy): Clear all projectiles.

5:Orbital Strike (100 energy): Deal 100 damage to all enemies, affected by armour.

Power Selected:Recall (50 energy): Teleport back to spawn.

Acceptance Test at011

Part 3 of 8

```
state:in game(0.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:70/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[C,1]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
Projectile:
Friendly Projectile Action:
Enemy Projectile Action:
Starfighter Action:
Enemy Action:
Natural Enemy Spawn:
  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17
A -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
B -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
C S -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
D -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
E -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
```

Enemy Spawn

Phase 7 of 1st Turn

- 1st num: [1, r]
- 2nd num: [1, 100]
- See p.17 of instructions.
- 1st use of RNG: (1,1) gen.

$$70 - (3 * 2) = 64$$

->move(A,1)

```
state:in game(1.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:64/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,1]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
[1,G]->health:100/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:F, can_see_Starfighter:F, location:[A,17]
Projectile:
Friendly Projectile Action:
Enemy Projectile Action:
Starfighter Action:
The Starfighter(id:0) moves: [C,1] -> [A,1]
Enemy Action:
Natural Enemy Spawn:
A Grunt(id:1) spawns at location [A,17].
  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17
A S -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  G
B -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
C -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
D -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
E -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
```

Acceptance Test at011

Part 4 of 8

```
state:in game(1.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:64/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,1]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
[1,G]->health:100/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:F, can_see_Starfighter:F, location:[A,17]
Projectile:
Friendly Projectile Action:
Enemy Projectile Action:
Starfighter Action:
The Starfighter(id:0) moves: [C,1] -> [A,1]
Enemy Action:
Natural Enemy Spawn:
A Grunt(id:1) spawns at location [A,17].
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A S - - - - - - - - - - - - - - - - - - 6
B - - - - - - - - - - - - - - - - - - -
C - - - - - - - - - - - - - - - - - - -
D - - - - - - - - - - - - - - - - - - -
E - - - - - - - - - - - - - - - - - - -
```

- Energy regen done before fire
- fire according to weapon
- Grunt not preempted by fire Regen then act

$$64 + 3 = 67$$

$$67 - 5 = 62$$

```
>fire
state:in game(2.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:62/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,1]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
[1,G]->health:100/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:F, can_see_Starfighter:F, location:[A,15]
Projectile:
[-1,*]->damage:70, move:5, location:[A,2]
[-2,<]->damage:15, move:4, location:[A,14]
Friendly Projectile Action:
Enemy Projectile Action:
Starfighter Action:
The Starfighter(id:0) fires at location [A,1].
A friendly projectile(id:-1) spawns at location [A,2].
Enemy Action:
A Grunt(id:1) moves: [A,17] -> [A,15]
A enemy projectile(id:-2) spawns at location [A,14].
Natural Enemy Spawn:
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A S * - - - - - - - - - - - - - - - - - - < G - -
B - - - - - - - - - - - - - - - - - - -
C - - - - - - - - - - - - - - - - - - -
D - - - - - - - - - - - - - - - - - - -
E - - - - - - - - - - - - - - - - - - -
```

regen

phase 2

Acceptance Test at011

Part 5 of 8

```
state:in game(2.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:62/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,1]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
[1,G]->health:100/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:F, can_see_Starfighter:F, location:[A,15]
Projectile:
[-1,*]->damage:70, move:5, location:[A,2]
[-2,<]->damage:15, move:4, location:[A,14]
Friendly Projectile Action:
Enemy Projectile Action:
Starfighter Action:
The Starfighter(id:0) fires at location [A,1].
A friendly projectile(id:-1) spawns at location [A,2].
Enemy Action:
A Grunt(id:1) moves: [A,17] -> [A,15]
A enemy projectile(id:-2) spawns at location [A,14].
Natural Enemy Spawn:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A S * - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
B - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
C - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
D - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
E - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

- projectiles move
- Energy regen done before move
- move 1 space
- update enemy vision
- Grunt not preempted by move
- Regen then act
- update enemy vision

```
->move(A,2)
state:in game(3.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:62/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,2]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
[1,G]->health:100/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:T, can_see_Starfighter:F, location:[A,13]
Projectile:
[-1,*]->damage:70, move:5, location:[A,7]
[-2,<]->damage:15, move:4, location:[A,10]
[-3,<]->damage:15, move:4, location:[A,12]
Friendly Projectile Action:
A friendly projectile(id:-1) moves: [A,2] -> [A,7]
Enemy Projectile Action:
A enemy projectile(id:-2) moves: [A,14] -> [A,10]
Starfighter Action:
The Starfighter(id:0) moves: [A,1] -> [A,2]
Enemy Action:
A Grunt(id:1) moves: [A,15] -> [A,13]
A enemy projectile(id:-3) spawns at location [A,12]
Natural Enemy Spawn:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A - S - - - - - * - - - - - < - - - - - < G - - - - -
B - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
C - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
D - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
E - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

$$62 + 3 = 65$$

$$65 - (3 * 1) = 62$$

regen →

Phase 2

Acceptance Test at011

Part 6 of 8

```

state:in game(3.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:62/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,2]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
[1,G]->health:100/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:T, can_see_Starfighter:F, location:[A,13]
Projectile:
[-1,*]->damage 70, move:5, location:[A,7]
[-2,<]->damage 15, move:4, location:[A,10]
[-3,<]->damage 15, move:4, location:[A,12]
Friendly Projectile Action:
A friendly projectile(id:-1) moves: [A,2] -> [A,7]
Enemy Projectile Action:
A enemy projectile(id:-2) moves: [A,14] -> [A,10]
Starfighter Action:
The Starfighter(id:0) moves: [A,1] -> [A,2]
Enemy Action:
A Grunt(id:1) moves: [A,15] -> [A,13]
A enemy projectile(id:-3) spawns at location [A,12].
Natural Enemy Spawn:
  1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17
A  _  S  _  _  _  *  _  _  <  _  _  <  G  _  _  _
B  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _
C  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _
D  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _
E  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _

```

- projectiles move
- Energy regen done before move
- move 1 space
- update enemy vision
- Grunt not preempted by move
- Regen then act
- update enemy vision

$$62 + 3 = 65$$

$$65 - (3 * 1) = 62$$

regen

```

->move(A,3)
state:in game(4.0), debug, ok
Starfighter:
[0,S]->health:70/70, energy:62/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,3]
Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
Power:Recall (50 energy): Teleport back to spawn.
score:0
Enemy:
[1,G]->health:61/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:T, can_see_Starfighter:F, location:[A,11]
Projectile:
[-4,<]->damage:15, move:4, location:[A,10]
Friendly Projectile Action:
A friendly projectile(id:-1) moves: [A,7] -> [A,12]
The projectile collides with enemy projectile(id:-2) at location [A,10], negating damage.
The projectile collides with enemy projectile(id:-3) at location [A,12], negating damage.
Enemy Projectile Action:
Starfighter Action:
The Starfighter(id:0) moves: [A,2] -> [A,3]
Enemy Action:
A Grunt(id:1) moves: [A,13] -> [A,11]
The Grunt collides with friendly projectile(id:-1) at location [A,12], taking 39 damage.
A enemy projectile(id:-4) spawns at location [A,10].
Natural Enemy Spawn:
  1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17
A  _  _  S  _  _  _  _  _  <  G  _  _  _  _  _  _
B  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _
C  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _
D  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _
E  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _  _

```

$$70 - 15 - 15 = 40$$

negating damage.
negating damage.

$$40 - 1$$

Acceptance Test at011

Part 8 of 8

```

state:in game(5.0), debug, ok
Starfighter:
  [0,S]->health:70/70, energy:59/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,1]
  Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
  Power:Recall (50 energy): Teleport back to spawn.
  score:0
Enemy:
  [1,G]->health:62/100, Regen:1, Armour:1, Vision:5, seen_by_Starfighter:T, can_see_Starfighter:F, location:[A,9]
Projectile:
  [-4,<]->damage:15, move:4, location:[A,6]
  [-5,<]->damage:15, move:4, location:[A,8]
Friendly Projectile Action:
Enemy Projectile Action:
  A enemy projectile(id:-4) moves: [A,10] -> [A,6]
Starfighter Action:
  The Starfighter(id:0) moves: [A,3] -> [A,1]
Enemy Action:
  A Grunt(id:1) moves: [A,11] -> [A,9]
  A enemy projectile(id:-5) spawns at location [A,8].
Natural Enemy Spawn:
  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
  A S - - - - - < - < G - - - - -
  B - - - - - - - - - - - - - - -
  C - - - - - - - - - - - - - - -
  D - - - - - - - - - - - - - - -
  E - - - - - - - - - - - - - - -
  
```

- projectiles move
- Energy regen done before move
- move 9 spaces
(colliding after 8 spaces)
- Starfighter destroyed

$$59 + 3 = 62$$

$$62 - (3 * 8) = 38$$

```

->move(A,10)
state:not started, debug, ok
Starfighter:
  [0,S]->health:0/70, energy:38/70, Regen:1/3, Armour:1, Vision:13, Move:10, Move Cost:3, location:[A,9]
  Projectile Pattern:Standard, Projectile Damage:70, Projectile Cost:5 (energy)
  Power:Recall (50 energy): Teleport back to spawn.
  score:2
Enemy:
Projectile:
Friendly Projectile Action:
Enemy Projectile Action:
  A enemy projectile(id:-4) moves: [A,6] -> [A,2]
  A enemy projectile(id:-5) moves: [A,8] -> [A,4]
Starfighter Action:
  The Starfighter(id:0) moves: [A,1] -> [A,9]
  The Starfighter collides with enemy projectile(id:-4) at location [A,2], taking 14 damage.
  The Starfighter collides with enemy projectile(id:-5) at location [A,4], taking 14 damage.
  The Starfighter collides with Grunt(id:1) at location [A,9], trading 62 damage.
  The Grunt at location [A,9] has been destroyed.
  The Starfighter at location [A,9] has been destroyed.
Enemy Action:
Natural Enemy Spawn:
  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
  A - - - - - - - X - - - - -
  B - - - - - - - - - - - - - - -
  C - - - - - - - - - - - - - - -
  D - - - - - - - - - - - - - - -
  E - - - - - - - - - - - - - - -
The game is over. Better luck next time!
  
```

→ silver orb (2 points) dropped by Grunt

15-1
↑
14 damage.
14 damage.
↙
70 - 14 * 2
" 42
42-62
" 20
→