

Laporan Tugas Besar 1
IF2121 Logika Informatika

-
K-01 - Kelompok Dunia Tidak Adil

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1 Deskripsi Program

Program yang kelompok kami (DuniaTidakAdil) buat untuk Tugas Besar I mata kuliah Logika Informatika ini bernama *Submerged*. *Submerged* adalah sebuah game petualangan berbasis teks yang diimplementasikan menggunakan bahasa pemrograman deklaratif Prolog. Dalam game ini, pemain harus mengeksplorasi sebuah kapal selam yang sedang tenggelam dan mencari jalan keluar ke permukaan. Pemain dapat melakukan perintah-perintah untuk berpindah tempat, mengambil dan menggunakan objek, serta berinteraksi dengan NPC.

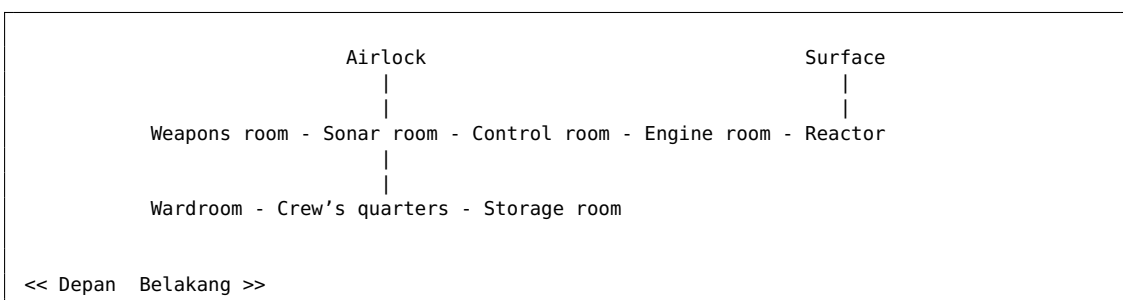
2 Keunikan dan Kelebihan

Game *Submerged* ini memiliki beberapa keunikan dan kelebihan:

- Game dikompilasi dari program Prolog menjadi sebuah file *executable* yang sudah memuat *interpreter* Prolog, sehingga game dapat langsung dijalankan tanpa terlebih dahulu menjalankan *interpreter* Prolog secara manual.
- Meskipun hanya ada 10 ruangan yang dapat didatangi pemain (karena cerita bertempat pada sebuah kapal selam yang sempit), ada banyak kondisi yang harus dipenuhi pemain. Contohnya, untuk membuka pintu ke ruangan-ruangan tertentu, pemain harus sudah menyalakan listrik, lalu membuka pintu melalui panel kendali di ruangan lainnya. Dengan begitu, permainan menjadi tidak terlalu mudah.
- Terdapat berbagai nilai yang bersifat seperti *timer* untuk memaksa pemain berusaha menyelesaikan permainan dengan lebih cepat, misalnya jarak kapal musuh, tingkat oksigen, kedalaman, dsb. Nilai-nilai tersebut akan terus berkurang setiap kali pemain pergi ke ruangan lain atau melakukan sebuah aksi. Jika melewati batas tertentu, maka pemain dianggap kalah.
- Cerita permainan dibuat dalam bahasa Inggris.

3 Peta Permainan dan Daftar Objek

3.1 Peta Permainan



3.2 Daftar Objek

Terdapat objek-objek statis maupun interaktif yang terletak pada beberapa lokasi dalam game ini:

3.2.1 *Weapons room*

- *Barrels*: pada awalnya menghalangi pintu keluar, bisa dipindahkan.
- *Explosives*: (statis) dapat diaktifkan untuk menghancurkan kapal selam (objektif sekunder), membutuhkan kode pengaktifan yang dapat dilihat di *document 2*.
- *Weapons*: (statis) tidak dapat digunakan.

3.2.2 *Sonar room*

- *Sonar display*: (statis) dapat menunjukkan jarak ke kapal musuh (jika terlalu dekat, maka pemain kalah; kecuali jika sudah mengaktifkan *Active Defense System*). Membutuhkan listrik untuk menyala.
- *Headphones*: tidak dapat digunakan.

3.2.3 *Crew's quarters*

- *Book, canned food, bucket*: tidak dapat digunakan.
- *Knife*: dapat digunakan untuk bunuh diri (menyerah).

3.2.4 *Wardroom*

- *Document 1*: mengandung informasi tentang kapal selam.
- *Document 2*: mengandung kode pengaktifan *explosives* yang dapat digunakan untuk menyelesaikan objektif sekunder.
- *Document 3*: mengandung kode aktivasi untuk *Active Defense System*.
- *Sub's logs*: mengandung cerita.

3.2.5 *Storage room*

- *Diving equipment*: harus dipakai untuk dapat bertahan hidup jika ruangan terisi air (misalnya jika membuka pintu ke ruangan yang berisi air).
- *Oxygen canister*: menambah tingkat oksigen sebesar 5 satuan.
- *Crowbar*: dapat dipakai memperbesar lubang/menyingkirkan halangan di *Reactor* supaya dapat dilewati untuk keluar.

3.2.6 *Control room*

- *Control panel*: (NPC, statis) dapat berinteraksi untuk mengaktifkan *Active Defense System*, serta *lock/unlock* pintu antar ruangan. Membutuhkan listrik untuk menyala.
- *Map*: (statis) menampilkan denah ruangan.
- *Radio*: (NPC, statis) dapat berinteraksi untuk mengetahui objektif sekunder (mengaktifkan *explosives*). Membutuhkan listrik untuk menyala.
- *Periscope*: (statis) tidak dapat digunakan.

3.2.7 *Engine room*

- *Fuse box*: (statis) dapat berinteraksi untuk menyalakan tenaga listrik cadangan.
- *Reactor status display*: (statis) menampilkan informasi bahwa ruang *Reactor* berisi air.
- *Fire extinguisher*: perangkap, mengurangi tingkat oksigen sebanyak 3 satuan jika dipakai.
- *Oxygen canister*: menambah tingkat oksigen sebanyak 5 satuan jika dipakai.
- Engine spare parts: tidak dapat digunakan.

3.2.8 *Reactor*

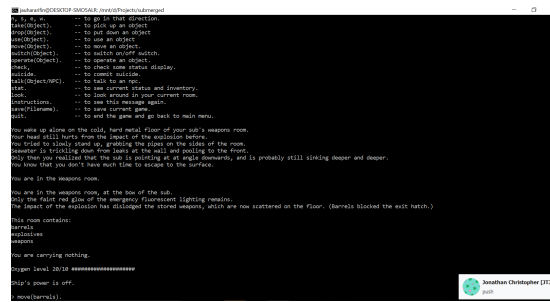
- *Hole*: (statis) lubang pada dinding luar kapal selam; pada awalnya terlalu kecil dan tidak dapat dilewati, tetapi dapat diperbesar menggunakan *crowbar*.
- *Engine, dead engineer*: (statis) tidak dapat digunakan.

4 Penjelasan *Command*

Terdapat beberapa *command* yang dapat digunakan oleh pemain dalam game ini:

- n/s/e/w: pindah ke ruangan di atas/bawah/kanan/kiri ruangan saat ini.
- take(Object): mengambil sebuah objek tidak statis yang terdapat di ruangan tempat pemain berada dan memasukkannya ke dalam *inventory*. Dapat digunakan misalnya ketika berada di *storage room*, dan ingin memasukkan *crowbar* ke dalam *inventory*.
- drop(Object): mengeluarkan objek dari *inventory* pemain dan meletakkannya di ruangan tempat pemain berada saat ini.
- use(Object): menggunakan sebuah objek yang sedang dibawa dalam *inventory*. Contohnya, menggunakan sebuah *oxygen canister* akan menambah tingkat oksigen sebesar 5 satuan.
- move(Object): memindahkan objek yang menghalangi jalan. Misalnya memindahkan *barrels* yang menghalangi pintu di *weapons room*.
- switchObject: menyalakan/mematikan sebuah saklar. Misalnya menyalakan/mematikan sumber listrik cadangan di *engine room*.
- operate(Object): mengoperasikan suatu objek statis, misalnya *control panel* di *control room*.
- check: melihat sebuah tampilan status, misalnya melihat keadaan *reactor status display* di *engine room*.
- suicide: bunuh diri - jika dilakukan, maka pemain kalah dan permainan berakhir.
- talk: untuk berbicara kepada sebuah objek/NPC, contohnya berbicara ke radio di *control room*.
- stat: untuk melihat keadaan status dan isi *inventory*.
- look: untuk menampilkan ulang keadaan ruangan.
- instructions: untuk menampilkan daftar *command*.
- save(Filename): untuk menyimpan keadaan pemain dalam sebuah *save file* sesuai parameter *Filename*.
- quit: keluar dari permainan.

5 Hasil Eksekusi



```
jonathan@DESKTOP-SKQCAU: ~/Documents/sonarwargame
$ ./sonarwargame
-- to go in that direction.
-- to pick up an object
-- to put down an object
-- to use an object
-- to move an object
-- to switch on/off switch.
-- to operate an object.
-- to check some status display.
-- to commit suicide.
-- to talk to an npc.
-- to see current status and inventory.
-- to look around in your current room.
-- to see this message again.
-- to save current game.
-- to end the game and go back to main menu.

You wake up alone on the cold, hard metal floor of your sub's weapons room.
Your head still hurts from the impact of the explosion before.
You tried to slowly stand up, grabbing the pipes on the sides of the room.
Seawater is trickling down from leaks at the wall and pooling to the front.
Only then you realized that the sub is pointing at an angle downwards, and is probably still sinking deeper and deeper.
You know that you don't have much time to escape to the surface.

You are in the weapons room.

You are in the weapons room, at the bow of the sub.
Only the faint red glow of the emergency fluorescent lighting remains.
The impact of the explosion has dislodged the stored weapons, which are now scattered on the floor. (Barrels blocked the exit hatch.)

This room contains:
barrels
explosives
weapons

You are carrying nothing.

Oxygen level 20/10 #####
Ship's power is off.

> move(barrels).
You successfully moved the barrels.

> e.
You are in the Sonar room.
```

Gambar 1: Contoh screenshot hasil eksekusi program

```
= SUBMERGED =
=====

Enter [start.] to begin, [load(Filename).] to load game, [exit.] to quit:
> start.
Available commands are:
n, s, e, w.      -- to go in that direction.
take(Object).    -- to pick up an object
drop(Object).    -- to put down an object
use(Object).     -- to use an object
move(Object).    -- to move an object.
switch(Object).  -- to switch on/off switch.
operate(Object). -- to operate an object.
check,          -- to check some status display.
suicide.        -- to commit suicide.
talk(Object/NPC). -- to talk to an npc.
stat.           -- to see current status and inventory.
look.          -- to look around in your current room.
instructions.   -- to see this message again.
save(Filename). -- to save current game.
quit.          -- to end the game and go back to main menu.

You wake up alone on the cold, hard metal floor of your sub's weapons room.
Your head still hurts from the impact of the explosion before.
You tried to slowly stand up, grabbing the pipes on the sides of the room.
Seawater is trickling down from leaks at the wall and pooling to the front.
Only then you realized that the sub is pointing at an angle downwards, and is probably still
sinking deeper and deeper.
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You are in the Weapons room.

You are in the weapons room, at the bow of the sub.
Only the faint red glow of the emergency fluorescent lighting remains.
The impact of the explosion has dislodged the stored weapons, which are now scattered on the
floor. (Barrels blocked the exit hatch.)

This room contains:
barrels
explosives
weapons

You are carrying nothing.

Oxygen level 20/10 #####

Ship's power is off.

> move(barrels).
You successfully moved the barrels.

> e.
You are in the Sonar room.
```

You entered the sonar room. (The sonar display is powered off./The sonar display emits a faint blue glow.)
There's a ladder that leads to the airlock upwards, through a closed hatch.
Another closed hatch leads to the crew's quarters below.
A passage opens to the control room in the back.

This room contains:
sonar display
airlock inner hatch
headphones

You are carrying nothing.

Oxygen level 19/10 #####

Ship's power is off.

> s.
You are in the Crew's quarters.

The crew's quarters is where the crew rests when not on duty.
A hatch to the back connects it with the storage room; a door to the front connects it to the wardroom.
There's a ladder to the sonar room above.

This room contains:
book
canned food
bucket
knife
dying sailor

You are carrying nothing.

Oxygen level 18/10 #####

Ship's power is off.

> e.
You are in the Storage room.

Food, equipment and supplies are kept in the storage room.
A hatch connects it with the crew's quarters in front.

This room contains:
diving equipment
oxygen canister
crowbar

You are carrying nothing.

Oxygen level 17/10 #####

Ship's power is off.

> take('diving equipment').
You take diving equipment.

> take('crowbar').
You take crowbar.

> w.
You are in the Crew's quarters.

The crew's quarters is where the crew rests when not on duty.
A hatch to the back connects it with the storage room; a door to the front connects it to the wardroom.
There's a ladder to the sonar room above.

This room contains:

book
 canned food
 bucket
 knife
 dying sailor

You are carrying:
 diving equipment
 crowbar

Oxygen level 16/10 #####

Ship's power is off.

> n.
 You are in the Sonar room.

You entered the sonar room. (The sonar display is powered off./The sonar display emits a faint blue glow.)
 There's a ladder that leads to the airlock upwards, through a closed hatch.
 Another closed hatch leads to the crew's quarters below.
 A passage opens to the control room in the back.

This room contains:
 sonar display
 airlock inner hatch
 headphones

You are carrying:
 diving equipment
 crowbar

Oxygen level 15/10 #####

Ship's power is off.

> e.
 You are in the Control room.

You entered the control room.
 The sub's computerized control and communication systems are mostly located here.
 Various displays and gauges can be seen on the wall.
 A console can be used to interact with the sub's control AI.
 A periscope mast is located near the center of the room.
 A hatch opens to the back, to the engine room.
 A passage leads forward to the sonar room.

This room contains:
 control panel
 map
 radio
 periscope
 Ship control AI

You are carrying:
 diving equipment
 crowbar

Oxygen level 14/10 #####

Ship's power is off.

> e.
 You are in the Engine room.

The engine room houses the forward part of the sub's reactor and engines.
 This room is where engineers control the sub's power-generating reactors.
 A hatch leads to the control room in front.
 Another hatch leads backwards, to the rear part of the reactor at the stern of the sub.

This room contains:

```

fuse box
reactor status display
engine spare parts
fire extinguisher
oxygen canister

You are carrying:
diving equipment
crowbar

Oxygen level 13/10 #####

Ship's power is off.

> switch('fuse box').
You turn on the power.

> w.
You are in the Control room.

You entered the control room.
The sub's computerized control and communication systems are mostly located here.
Various displays and gauges can be seen on the wall.
A console can be used to interact with the sub's control AI.
A periscope mast is located near the center of the room.
A hatch opens to the back, to the engine room.
A passage leads forward to the sonar room.

This room contains:
control panel
map
radio
periscope
Ship control AI

You are carrying:
diving equipment
crowbar

Oxygen level 12/10 #####

Ship's power is on.

> operate('control panel').
You unlock all hatches.

> e.
You are in the Engine room.

The engine room houses the forward part of the sub's reactor and engines.
This room is where engineers control the sub's power-generating reactors.
A hatch leads to the control room in front.
Another hatch leads backwards, to the rear part of the reactor at the stern of the sub.

This room contains:
fuse box
reactor status display
engine spare parts
fire extinguisher
oxygen canister

You are carrying:
diving equipment
crowbar

Oxygen level 11/10 #####

Ship's power is on.

> use ('diving equipment').
Invalid input.

```



```

> use('diving equipment').
You wear the diving equipment.

> e.

You are in the Reactor.

The reactor is flooded and heavily damaged.
It's metal parts were torn apart.
The hull has been sliced through; a gaping hole opens to the outside. (However, bent frames and
metal pipes are blocking your way. You need to somehow clear the way by force to pass
through and go outside.)

This room contains:
hole
engine
dead engineer

You are carrying:
crowbar

Oxygen level 10/10 #####

Ship's power is on.

> e.
You can't go that way.

> n.
There's a hole, but it's too small for you to pass through.

> use(crowbar).
You use the crowbar to widen the hole.

> n.
You finally escaped from the doomed sub, and ascend slowly to the surface in your emergency
diving equipment.
You reach the surface.
The sky is clear, and moonlight reflected off the somewhat calm sea, dotted with specks of oil
and floating debris from the destroyed vessels.
In the distance, you see enemy ships sailing past the border.
The war has just started.

You are carrying:
crowbar

Oxygen level 10/10 #####

Ship's power is on.

You finally escaped from the doomed sub, and ascend slowly to the surface in your emergency
diving equipment.
You reach the surface.
The sky is clear, and moonlight reflected off the somewhat calm sea, dotted with specks of oil
and floating debris from the destroyed vessels.
In the distance, you see enemy ships sailing past the border.
The war has just started.

You are carrying:
crowbar

Oxygen level 10/10 #####

Ship's power is on.

You didn't do the secondary objective

This game was created by:
> Jonathan Christopher / 13515001
> Jordhy Fernando / 13515004

```

6 Pembagian Kerja

Berikut adalah tabel pembagian tugas dalam kelompok:

Komponen	Anggota	Dikerjakan pada
<i>Main loop dan menu</i>	Jonathan	17 November 2016
<i>Makefile</i>	Jonathan	16 November 2016
Teks cerita	Jonathan	16-29 November 2016
Laporan	Jonathan	29 November 2016
<i>Load/save</i>	Jordhy	28-29 November 2016
Pindah ruangan	Jauhar, Jordhy	23-24 November 2016
<i>Oxygen level</i>	Turfa	24 November 2016
<i>Take/drop</i>	Jordhy	24 November 2016
<i>Check, talk, suicide</i>	Jauhar	29 November 2016
<i>Operate, look, stat, instructions</i>	Jordhy	29 November 2016
<i>Win/lose</i>	Jordhy	29 November 2016
<i>Game states + getter/setter</i>	Turfa	24-29 November 2016
<i>Active defense system AI</i>	Jauhar	29 November 2016
<i>Tests</i>	Jauhar	29 November 2016