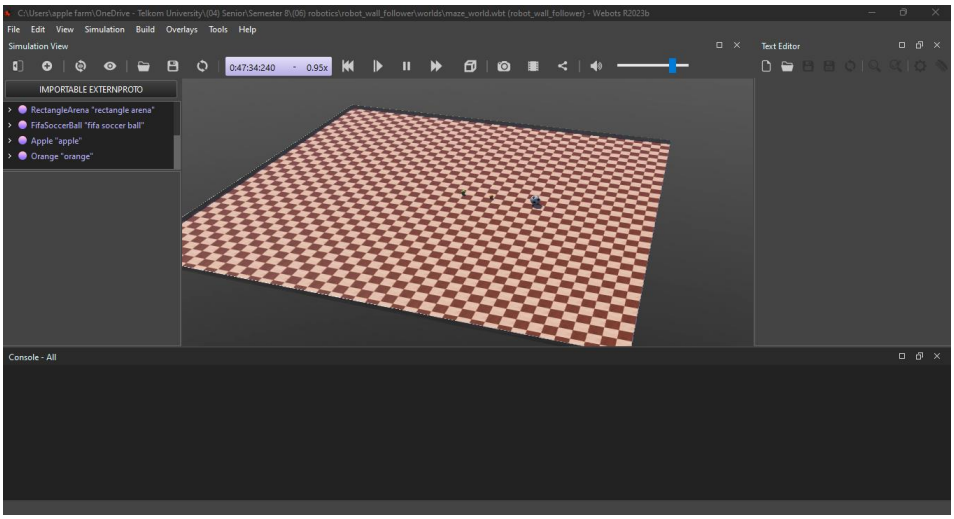
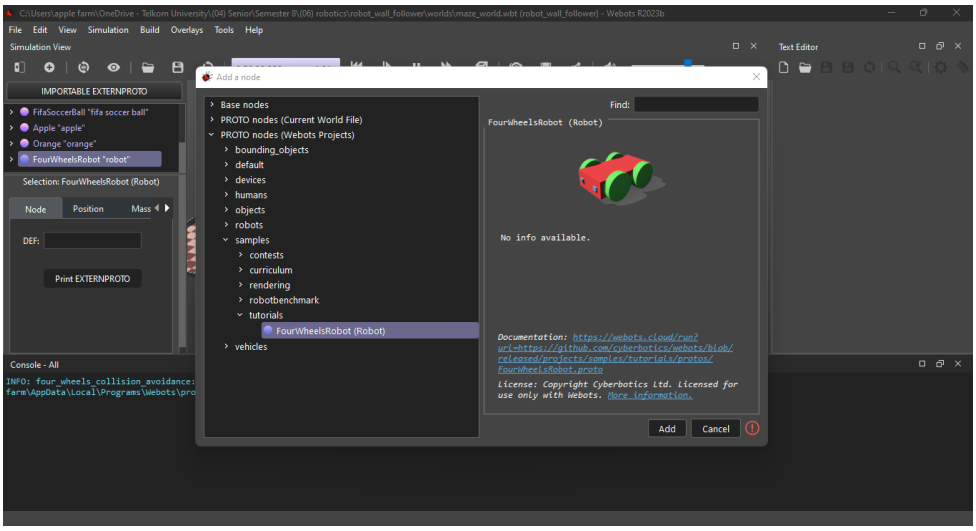
Report Tugas Week 12

Visual Object Recognition in Camera Webots

Buka Aplikasi Webots dan buatlah file baru untuk bikin world baru, seperti dibawah ini:



Kemudian saya menambah beberapa objek di dalamnya. Selanjutnya saya tambahkan robot Four Wheels Robot untuk mendeteksi objek-objek disekitarnya.



Tuliskan kode dibawah ini sehingga robotnya jalan.

Source Code:

```
#include <webots/distance_sensor.h>
#include <webots/motor.h>
#include <webots/robot.h>

// time in [ms] of a simulation step
#define TIME_STEP 64

// entree point of the controller
int main(int argc, char **argv) {
// initialise the Webots API
wb_robot_init();

// internal variables
int i;
int avoid_obstacle_counter = 0;

// initialise distance sensors
WbDeviceTag ds[2];
char ds_names[2][10] = {"ds_left", "ds_right"};
for (i = 0; i < 2; i++) {
ds[i] = wb_robot_get_device(ds_names[i]);
wb_distance_sensor_enable(ds[i], TIME_STEP);
}

// initialise motors
WbDeviceTag wheels[4];
char wheels_names[4][8] = {"wheel1", "wheel2", "wheel3", "wheel4"};
for (i = 0; i < 4; i++) {
wheels[i] = wb_robot_get_device(wheels_names[i]);
wb_motor_set_position(wheels[i], INFINITY);
}

// feedback loop
while (wb_robot_step(TIME_STEP) != -1) {
// init speeds
double left_speed = 1.0;
double right_speed = 1.0;

if (avoid_obstacle_counter > 0) {
avoid_obstacle_counter--;
left_speed = 1.0;
```

```
right_speed = -1.0;
} else {
// read sensors outputs
double ds_values[2];
for (i = 0; i < 2; i++)
ds_values[i] = wb_distance_sensor_get_value(ds[i]);

// increase counter in case of obstacle
if (ds_values[0] < 950.0 || ds_values[1] < 950.0)
avoid_obstacle_counter = 100;
}

// write actuators inputs
wb_motor_set_velocity(wheels[0], left_speed);
wb_motor_set_velocity(wheels[1], right_speed);
wb_motor_set_velocity(wheels[2], left_speed);
wb_motor_set_velocity(wheels[3], right_speed);
}

// cleanup the Webots API
wb_robot_cleanup();
return 0; // EXIT_SUCCESS
}
```

Output: