Robocode Game – Sniper

Minor Project

IBM Career Education

Disclaimer

This Software Requirements Specification document is a guideline. The document details all the high level requirements. The document also describes the broad scope of the project. While developing the solution if the developer has a valid point to add more details being within the scope specified then it can be accommodated after consultation with IBM designated Mentor.

INTRODUCTION

The purpose of this document is to define scope and requirements of an IBM Robocode robot called “Sniper”. The proposed robot will specialize in sharp shooting. It will acquire sharp shooting skills by tracking the its own bullets fired using an aiming method including their hit/miss rate.

This document is the primary input to the development team to architect a solution for this project.

System Users

There are no direct users of the game as this is a game played between robots. The Sniper will be pitched against the existing sample robots to test its ability to acquire sharp shooting skills.

About Robocode

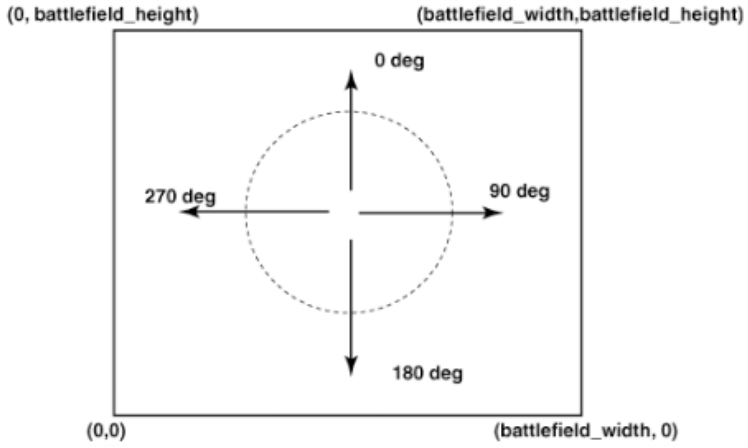
Robocode is a game engine that simulates a battlefield environment. A Robocode robot visually looks like a tank, which has following components:

1. A “body” that can move in any direction,
2. A “radar” that can scan other robots in the battle field,
3. A “gun” that can be used to fire at enemy robots.

You gain points for staying alive. You develop your robot in Java by extending Robocode’s built-in class(es).

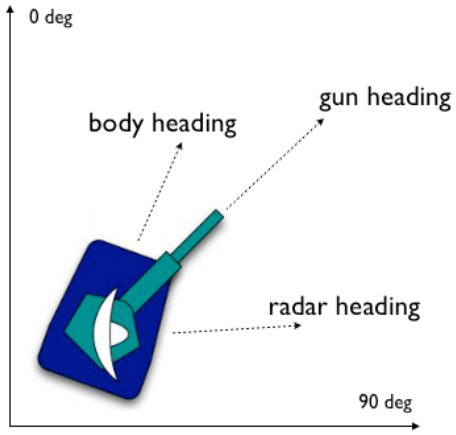
Robocode Battlefield

The following diagram illustrates the battlefield details in terms of directions and coordinate system:



Robot's Anatomy

The following diagram highlights the robot's anatomy:



The robot body is shown in blue color; the gun is shown in green and the radar is highlighted in white color.

The robot has several actions (i.e. java functions) such as "ahead(distance)" to move forward by the specified "distance" or "turnGunLeft(angle)" to change the gun's heading by the specified "angle" and many more. Similarly, it can handle events like "onBulletHit" whenever you successfully shoot another robot "onBulletMissed" whenever you miss your opponent, etc.

REQUIREMENTS

As the first step, download the Robocode software from its home located at http://robocode.sourceforge.net/ URL. This page will also provide you links to a host of learning & development resources. Use these resources to set it up on your computer and play with sample robots to familiarize yourself. After this you are ready to develop your "Sniper" robot.

The Sniper

This robot will have following capabilities:

1. It will be capable of using multiple aiming methods (e.g. static, linear, circular, etc).
2. It will track every bullet for a hit or a miss and use this information to improve its capability to sharp shoot various kinds of enemy robots.

It will require development of a specialized bullet tracker class.

DEVELOPMENT ENVIRONMENT

The "Sniper" will be developed in Java using Eclipse along with Robocode's IDE.