KBSW180141 Win-32- Save and Load Composite Map

This document introduces the demo project of "composite_map_demo", including how to save and load maps of stcm format(composite map).

Content

IDE Preparation

- Software
  - Visual Studio 2010 SP1
  - Slamware Windows SDK:Slamware Windows SDK
  - RoboStudio(for map display):Robostudio installer
  - Sample Code:

> Higher version of Visual Studio will cause errors. sometime you will need to upgrade SP1 package to make your VS compatable with .Net Framework.

- Hardware

Either one of following

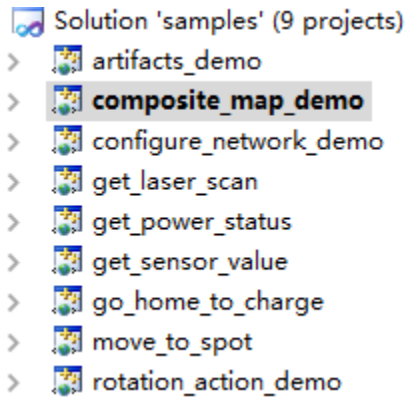
  - Slamware SDP mini
  - Slamware SDP
  - Slamware Kit
  - Zeus/Apollo robot base

Download

Win32-Demo

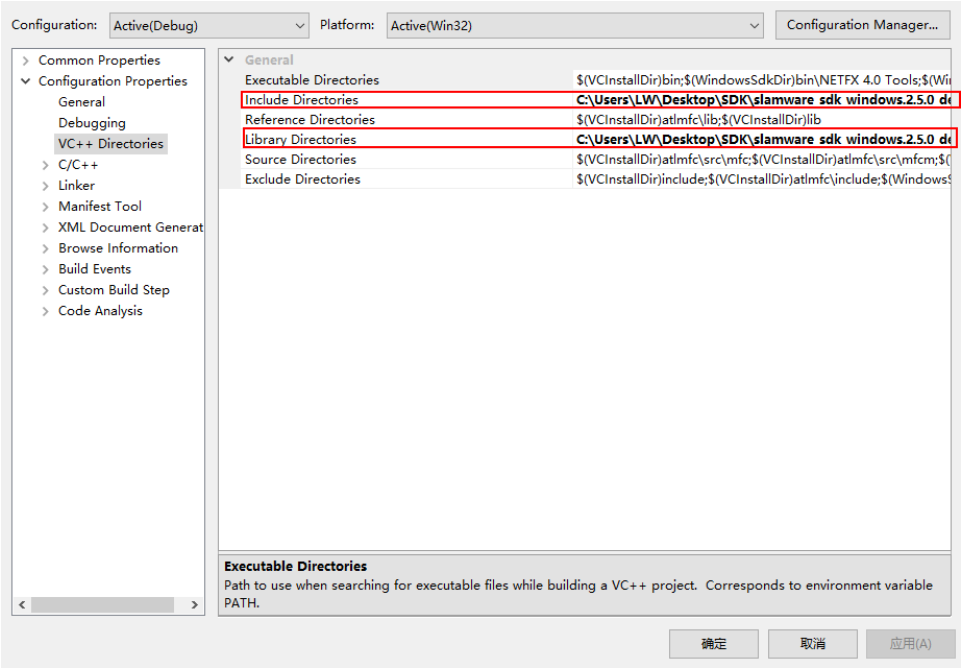
Compiling

1. **Right click on "composite_map_demo" project, set as StartUp project.**

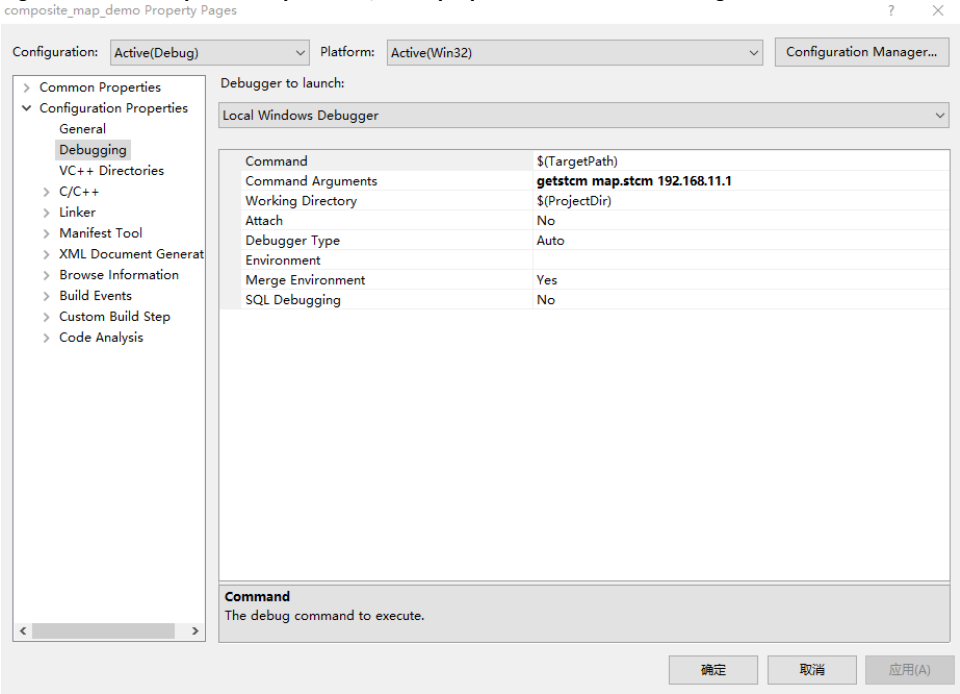


2. **Right click on "composite_map_demo", then " Properties"configure "include" and "lib" directories to the corresponding folder path of Slamware SDK.**

> It's not necessary to copy files to the project directory, user will only need to configure the folder path of SDK.



3. **Right click on "composite_map_demo", then "properties"set "Command Arguments" as follows:**



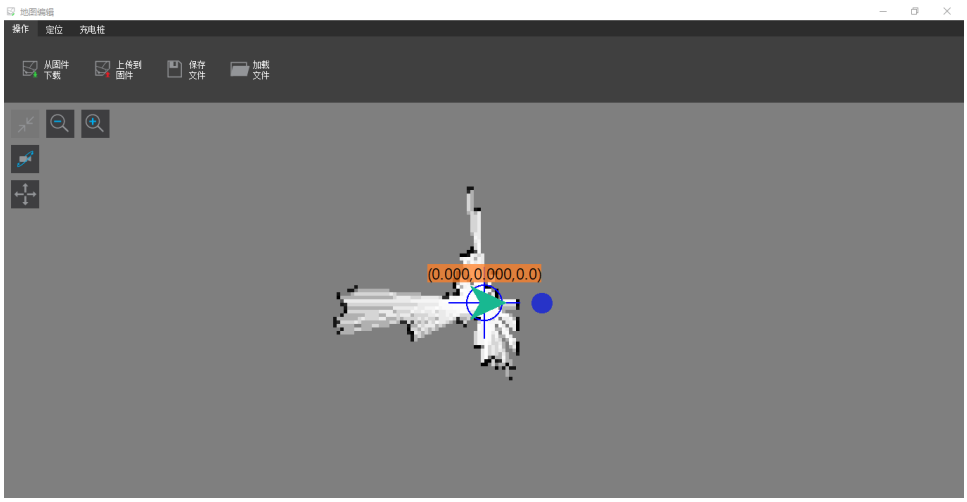
Syntax

composite_map_demo [OPTS] [filename] <SDP IP Address>
SDP IP Address The ip address string of the SLAMWARE SDP
getstcm filename download compositeMap
setstcm filename upload compositeMap
-h Show this message

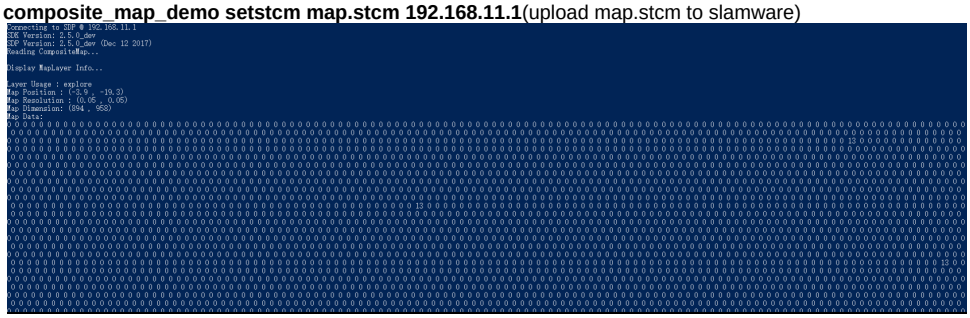
4. **Click " F5" to execute.**

   - **composite_map_demo getstcm map.stcm 192.168.11.1** (load composite map from slamware, and generate a map.stcm file in a defined folder path)

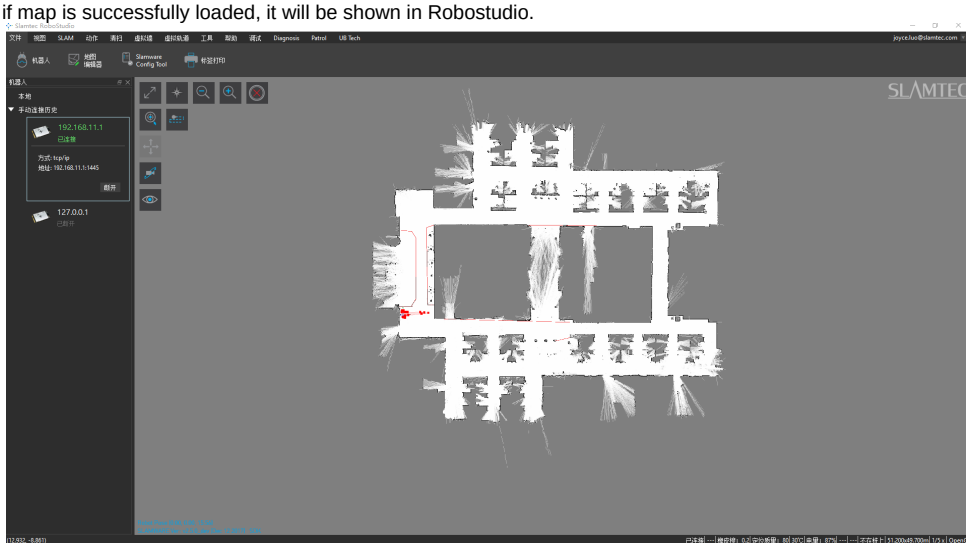
The generated maps could be opened with the " map editor" plug-in of the Robostudio



- **composite_map_demo setstcm map.stcm 192.168.11.1**(upload map.stcm to slamware)



if map is successfully loaded, it will be shown in Robostudio.



Code

- Save maps from Slamware to a local directory.

composite map

```
bool StcmMapWriter(const std::string file_name, SlamwareCorePlatform platform) {
        CompositeMap composite_map = platform.getCompositeMap();
    CompositeMapWriter composite_map_writer;
    std::string error_message;
    bool result = composite_map_writer.saveFile(error_message, file_name, composite_map);
    return result;
}
```

- Load composite map from a local directory.

composite map

```
bool StcmMapReader(const std::string file_path, rpos::core::Pose pose, SlamwareCorePlatform platform) {
    CompositeMapReader composite_map_reader;
    std::string error_message;
    boost::shared_ptr<CompositeMap> composite_map(composite_map_reader.loadFile(error_message, file_path));
    if (composite_map) {
        platform.setCompositeMap((*composite_map), pose);
        return true;
    }
    return false;
}
```

- Display data of different map layers from a composite map, including virtual walls and virtual tracks, etc.

map layer

```
    CompositeMapReader composite_map_reader;
    std::string error_message;
    boost::shared_ptr<CompositeMap> composite_map(composite_map_reader.loadFile(error_message, file_path));
    if (composite_map) {
        for (auto it = composite_map->maps().begin(); it != composite_map->maps().end(); ++it) {
            auto layer = *it;
            std::string usage = layer->getUsage();
                        std::string type = layer->getType();
                        std::cout << "Layer Usage : " << usage << std::endl;
                        //get grid map layer
            if (type == GridMapLayer::Type) {
                                auto grid_map = boost::dynamic_pointer_cast<GridMapLayer>(layer);
                                std::cout << "Map Position : (" << grid_map->getOrigin().x() << " , " <<
                                        grid_map->getOrigin().y() << ")" <<std::endl;
                                std::cout << "Map Resolution : (" << grid_map->getResolution().x() <<
                                        " , " << grid_map->getResolution().y() << ")" <<std::endl;
                                std::cout << "Map Dimension: (" << grid_map->getDimension().x() <<
                                        " , " << grid_map->getDimension().y() << ")" <<std::endl;
                                std::cout << "Map Data:" << std::endl;
                                for (auto it = grid_map->mapData().begin(); it != grid_map->mapData().end();
++it) {
                                        std::cout << (int)*it << " " ;
                                }
                                std::cout << std::endl << std::endl;
            }
                        //get line map layer
            else if (type == LineMapLayer::Type) {
                auto line_map = boost::dynamic_pointer_cast<LineMapLayer>(layer);
                                for (auto it = line_map->lines().begin(); it != line_map->lines().end();
++it) {
                                        auto line = it->second;
                                        std::cout << "start: (" << line.start.x() << " , " << line.start.y()
<< ")" << std::endl;
                                        std::cout << "end: (" << line.end.x() << " , " << line.end.y() <<
")" << std::endl;
                                }
                                std::cout << std::endl;
            }
                        //get pose map layer
                        else if (type == PoseMapLayer::Type) {
                                auto pose_map = boost::dynamic_pointer_cast<PoseMapLayer>(layer);
                                for (auto it = pose_map->poses().begin(); it != pose_map->poses().end();
++it) {
                                        auto pos = it->second;
                                        std::cout << "Position : (" << pos.pose.x() << " , " << pos.pose.y()
<< ")" << std::endl;
                                }
                                std::cout << std::endl;
                        }
                        else if (type == PointsMapLayer::Type) {
                                //TODO: get Points map layer
                                std::cout << std::endl;
            }
                        else {
                                //TODO: get unknown map layer
                                std::cout << std::endl;
            }
        }
```