

***Module: ECS7002P Artificial Intelligence in Games***

***Assignment 3: Frozen Lake***

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1. The implementation for the frozen lake environment was organized into a modular structure. The base environment model was placed in a separate module and another model for the frozen lake environment was created which inherits from the base model class. Furthermore, model-based and model-free algorithms were also put into separate modules and a testing module was implemented to test the environment as well as debug potential bugs and incorrect implementations

The main module is configured to require a flag argument which determines the kind of lake the agent will play in. Depending on which flag is passed, the program passes the correct lake array. This allows the program to be more flexible and dynamic allowing both environments to be evaluated within a single file.

**Directory structure**

*Frozen Lake*

* *frozen\_lake.py -- implementation of frozen lake*
* *main.py -- main function (takes flag arguments)*
* *model.py -- base of the model*
* *model\_based.py -- model based algorithms*
* *model\_free.py -- model free algorithms*
* *p.npy -- numpy array of correct probability matrix*
* *play.py -- play the game*
* *test.py – check implementation, debug*

2.