

**Course Experiment Report**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Course:** | Java Programming Language | | | | | | |
|  |  | | | | | | |
| **Semester:** | 1-18th | **week** | 2nd | **year** | | 1st | **term** |
|  |  |  |  |  | |  |  |
| **Major:** | Software Engineering Class | | | | | **Class:** | 2018 |
|  |  | | | | |  |  |
| **Student name:** | Song Xingjian | | **Student No.:** | | 222018321062006 | | |
|  |  | |  | |  | | |
| **Teacher:** | Wang Xiaomeng | | | | | | |

College of Computer and Information Science

|  |  |  |  |
| --- | --- | --- | --- |
| Project | Exp 4 Objects and Classes | | |
| Time | 2019.10.24 | Type | □Verification □Design □Synthetical |
| **1. Objective**  Through this training, to make the students skilled in the use of class, object, inheritance, polymorphism to programming. To understand the definition of class, the definition of an instance variable, the definition of the method, the difference between the formal parameters and the real parameters, and the method of the parameters in the Java language. To understand abstract classes and interfaces and grasp how to program with them.  **2. Requirement**  Programming the following exercise  **Problem 1:** Design a ***gobang*** *(or Five in a row)* game  The objective of the experiment is to design and implement a ***gobang*** game.    **3. Content and design of experiment(main content, operations, algorithm description or code of program)**  **Problem 1:** Design a gobang (or Five in a row) game  **Solutions:**   1. 分为三个类，一个为主函数类，另外两个分别为玩家Player类，和棋盘FIRBoard类； 2. 对于棋盘FIRBoard类，主要有打印棋盘函数printGrid()，放置棋子函数setChessPiece (int row, int col)，判断是否胜利的judge()函数，另外还有默认构造函数中的初始化函数initializeGrid()将棋盘初始化为10x10，剩余棋子数为1000； 3. 对于玩家Player类，主要有放置棋子函数putAPiece(FIRBoard board)和默认构造函数； 4. 利用主函数进行实例化玩家和棋盘，用过循环交替下棋并判断胜负；   **Codes:**   1. Gobang.java      1. Player.java        1. FIRBoard.java                 **Results:**    **Summary:**   1. 使用其他类的方法的时候要用import将其引入，否则无法调用； 2. Java的格式化输出与C++类似，“%-2d”的意思就是输出一个int类型的整数，占两个字符，左对齐； 3. 为了进行封装，保证数据的安全性，要将类的变量尽量设成private类型，如果外部需要调用的话写get函数或set函数作为接口； 4. 合理利用默认构造函数，对类的示例进行初始化； 5. 注意grid二维数组的下标表示是行列数减一； 6. 在判断是否有五连棋子的时候，要以当前棋子位置为中心，分别计算竖直方向、水平方向、对角线和反对角线方向的连续棋子个数，任意一个方向连续棋子个数大于等于5即为获胜； | | | |

|  |  |  |
| --- | --- | --- |
| Teacher’s  comments | content and design of experiment（A-E）： |  |
| operations, algorithm description or code of program（A-E）： |  |
| results（A-E）： |  |
| summary and analysis of experiment（A-E）： |  |
| Grade（A-E）： | |