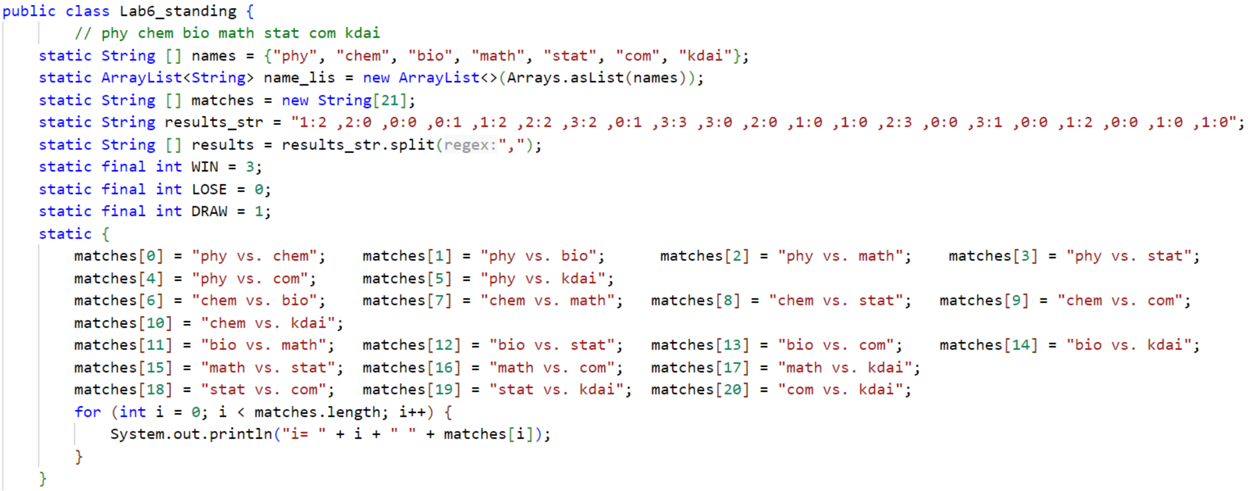
วัตถุประสงค์

A. ฝึกการวิเคราะห์ปัญหา

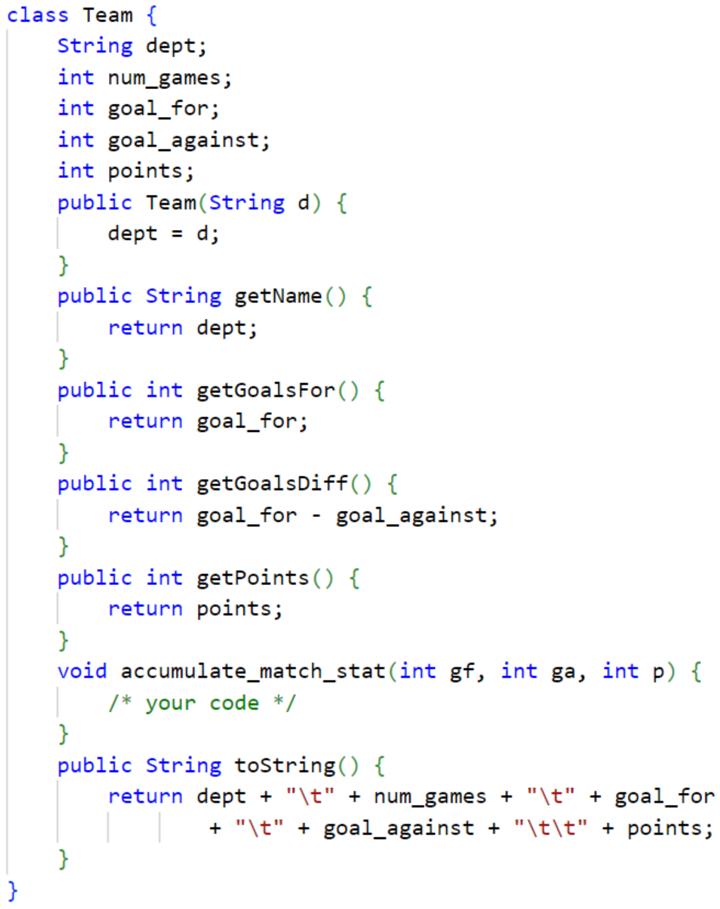
B. ทดลองใช้ Collections.sort() / Collections.reverse() และการใช้ Comparator

การแข่งขัน mini league ประกอบด้วย matches (เก็บ team1 vs team2) และ results เก็บ score1 : score2)



```
public class Lab6_standing {
        // phy chem bio math stat com kdai
    static String [] names = {"phy", "chem", "bio", "math", "stat", "com", "kdai"};
    static ArrayList<String> name_lis = new ArrayList<>(Arrays.asList(names));
    static String [] matches = new String[21];
    static String results_str = "1:2 ,2:0 ,0:0 ,0:1 ,1:2 ,2:2 ,3:2 ,0:1 ,3:3 ,3:0 ,2:0 ,1:0 ,1:0 ,2:3 ,0:0 ,3:1 ,0:0 ,1:2 ,0:0 ,1:0 ,1:0";
    static String [] results = results_str.split(regex:",");
    static final int WIN = 3;
    static final int LOSE = 0;
    static final int DRAW = 1;
    static {
        matches[0] = "phy vs. chem";    matches[1] = "phy vs. bio";      matches[2] = "phy vs. math";    matches[3] = "phy vs. stat";
        matches[4] = "phy vs. com";     matches[5] = "phy vs. kdai";
        matches[6] = "chem vs. bio";    matches[7] = "chem vs. math";   matches[8] = "chem vs. stat";   matches[9] = "chem vs. com";
        matches[10] = "chem vs. kdai";
        matches[11] = "bio vs. math";   matches[12] = "bio vs. stat";   matches[13] = "bio vs. com";    matches[14] = "bio vs. kdai";
        matches[15] = "math vs. stat";  matches[16] = "math vs. com";   matches[17] = "math vs. kdai";
        matches[18] = "stat vs. com";   matches[19] = "stat vs. kdai";  matches[20] = "com vs. kdai";
        for (int i = 0; i < matches.length; i++) {
            System.out.println("i= " + i + " " + matches[i]);
        }
    }
```

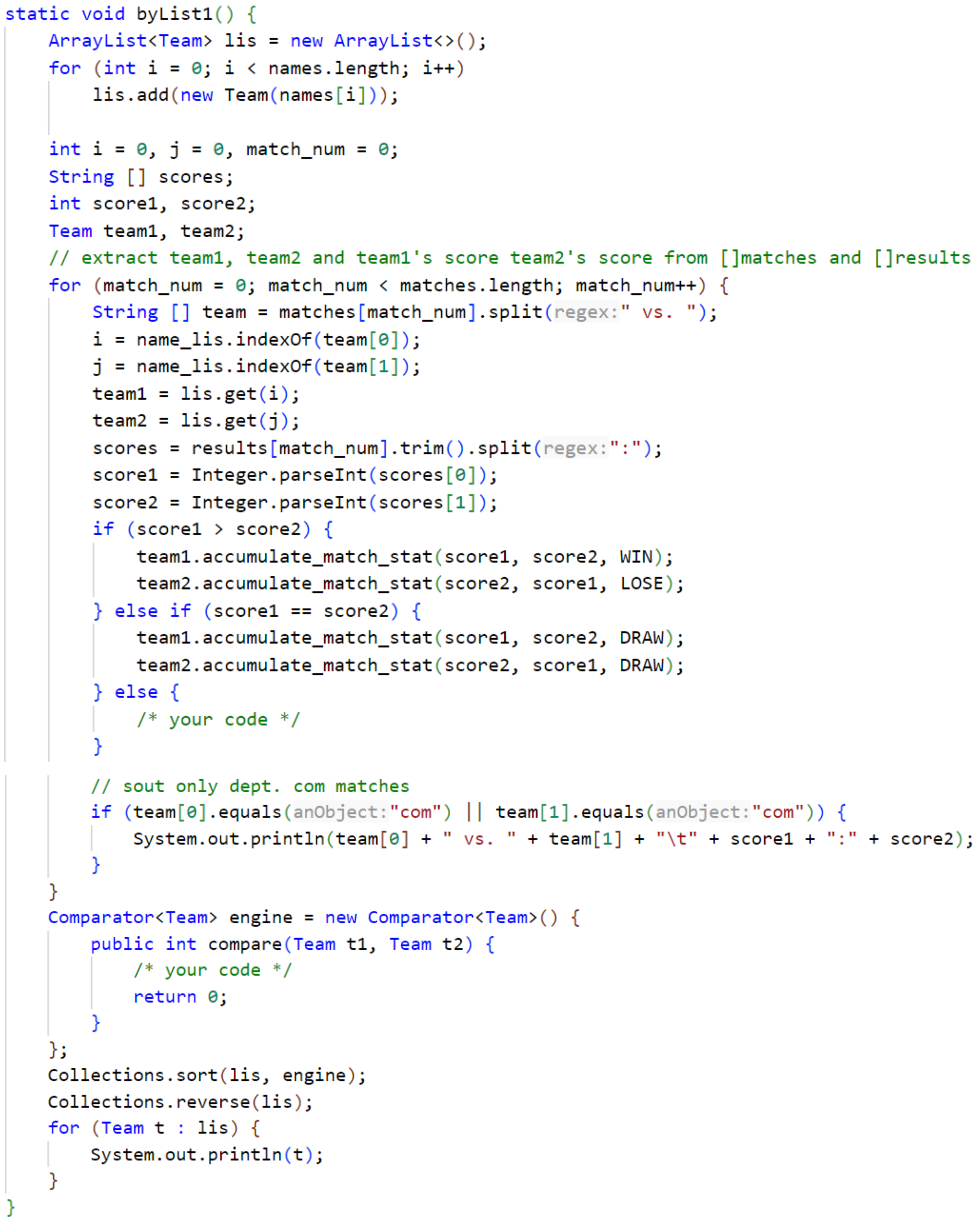
เพื่อเก็บข้อมูลสำหรับตารางคะแนน ได้มีการออกแบบ class Team ไว้ดังนี้



```
class Team {
    String dept;
    int num_games;
    int goal_for;
    int goal_against;
    int points;
    public Team(String d) {
        dept = d;
    }
    public String getName() {
        return dept;
    }
    public int getGoalsFor() {
        return goal_for;
    }
    public int getGoalsDiff() {
        return goal_for - goal_against;
    }
    public int getPoints() {
        return points;
    }
    void accumulate_match_stat(int gf, int ga, int p) {
        /* your code */
    }
    public String toString() {
        return dept + "\t" + num_games + "\t" + goal_for
                + "\t" + goal_against + "\t\t" + points;
    }
}
```

accumulate_match_stat(int gf, int ga, int p) คือการ update สถิติจากผลการแข่งขันแต่ละนัด

เราสามารถใช้ .indexOf() เพื่อดึง team1 และ team2



```
static void byList1() {
    ArrayList<Team> lis = new ArrayList<>();
    for (int i = 0; i < names.length; i++)
        lis.add(new Team(names[i]));

    int i = 0, j = 0, match_num = 0;
    String [] scores;
    int score1, score2;
    Team team1, team2;
    // extract team1, team2 and team1's score team2's score from []matches and []results
    for (match_num = 0; match_num < matches.length; match_num++) {
        String [] team = matches[match_num].split(regex:" vs. ");
        i = name_lis.indexOf(team[0]);
        j = name_lis.indexOf(team[1]);
        team1 = lis.get(i);
        team2 = lis.get(j);
        scores = results[match_num].trim().split(regex:":");
        score1 = Integer.parseInt(scores[0]);
        score2 = Integer.parseInt(scores[1]);
        if (score1 > score2) {
            team1.accumulate_match_stat(score1, score2, WIN);
            team2.accumulate_match_stat(score2, score1, LOSE);
        } else if (score1 == score2) {
            team1.accumulate_match_stat(score1, score2, DRAW);
            team2.accumulate_match_stat(score2, score1, DRAW);
        } else {
            /* your code */
        }

        // sout only dept. com matches
        if (team[0].equals(anObject:"com") || team[1].equals(anObject:"com")) {
            System.out.println(team[0] + " vs. " + team[1] + "\t" + score1 + ":" + score2);
        }
    }
    Comparator<Team> engine = new Comparator<Team>() {
        public int compare(Team t1, Team t2) {
            /* your code */
            return 0;
        }
    };
    Collections.sort(lis, engine);
    Collections.reverse(lis);
    for (Team t : lis) {
        System.out.println(t);
    }
}
```

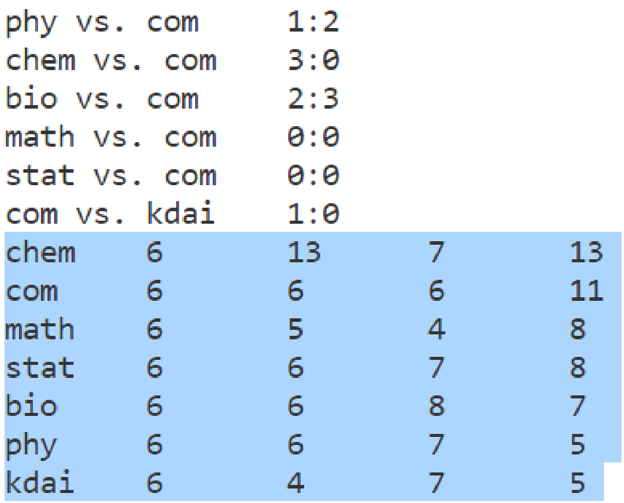
ใช้ Collections.sort(..., ...) ให้เรียงตามคะแนน (หากคะแนนเท่ากัน เรียงตามผลต่างประตูได้-เสีย) ใช้ Collections.reverse(...) เพื่อเรียงจากมากไปน้อย

ตัวอย่าง page ศึกษา multiple criteria comparator

https://www.java67.com/2019/06/top-5-sorting-examples-of-comparator-and-comparable-in-java.html

หมายเหตุ

แนะนำให้ใช้ .trim() ให้เป็นนิสัย สำหรับการประมวลผลสตริง



```
phy vs. com     1:2
chem vs. com    3:0
bio vs. com     2:3
math vs. com    0:0
stat vs. com    0:0
com vs. kdai    1:0
chem    6       13      7       13
com     6       6       6       11
math    6       5       4       8
stat    6       6       7       8
bio     6       6       8       7
phy     6       6       7       5
kdai    6       4       7       5
```

ส่ง Lab6_standing_XXYYYY.java

กำหนดส่ง TBA