**Topic:** Higher Order Functions

**Topic Introduction:**

The concept of higher-order functions - specifically map, filter, and fold - is an important tool in functional programming. These functions allow us to write concise and efficient code for transforming and processing data, and are commonly used in a variety of applications. In this coding assignment, you will implement a program that uses all three of these functions to process a dataset of student records and generate a report on their grades.

**Assignment Goals:**

* Understand the concepts of higher-order functions and how they can be used to process data.
* Practice using map, filter, and fold in a real-world application.
* Develop skills in functional programming and stream processing.

**Assignment Description:**

You are given a CSV file containing records of students in a school, including their names, grades, and courses taken. Your task is to write a program that reads this file, processes the data using map, filter, and fold, and generates a report on the students' grades.

1. Use map to transform the original list of Student objects into a new list of GradeInfo objects, where each GradeInfo object contains the course name, the average grade for that course, and the number of students who took the course. You can assume that each student takes only one course.
2. Use filter to remove any courses with less than 5 students.
3. Use fold to calculate the total number of students in each grade category (A, B, C, D, F).
4. Generate a report that displays the average grade and number of students for each course (only for courses with at least 5 students), as well as the total number of students in each grade category.

|  |
| --- |
| Your output should look something like this. |
| Course Report: // Only Display result of courses with more than 4 students  --------------  English: avg=83.60, count=5  Math: avg=87.20, count=5  Grade Distribution: // show data from all students  -------------------  A: 4  B: 5  C: 3  D: 1  F: 0 |

**Key:**

The complete code for this assignment is provided in the Key Code folder with the submission.