

System Overview

The grade system reads in the scores for lab1, lab2, lab3, midTerm, finalExam, etc. The built-in weights for each score are 0.15, 0.15, 0.15, 0.25, and 0.3, respectively. After calculating the total score based on these weights, the system allows users to input commands to inquire about scores and rankings, and they can also update the weights to recalculate the total score.

System Overview System Exception Handling (Fool-proofing)

Brief overview of exception : Invalid number input
Handling screen :

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 0
Invalid command. Please enter a number between 1 and 10.
```

Brief overview of exception : Invalid ID input
Handling screen :

```
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 1
Enter Student ID: 111000176
Student ID not found.
```

System Function

Function Name: show_score

Function Steps:

Step 1.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): </pre> <p>Screen Display</p>
Step 2.	User input: 1
Step 3.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): 1 Enter Student ID: </pre> <p>Screen Display</p>
Step 4.	User input: 955002056
Step 5.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): 1 Enter Student ID: 955002056 Scores: 88 92 88 98 91</pre> <p>Screen Display</p>

Function Interface:

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 1
Enter Student ID: 955002056
Scores: 88 92 88 98 91
```

Function Name: show_grade_letter

Function Steps:

Step 1.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): </pre> <p>Screen Display</p>
Step 2.	User input: 2
Step 3.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): 2 Enter Student ID: </pre> <p>Screen Display</p>
Step 4.	User input: 955002056

Step 5.

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 2
Enter Student ID: 955002056
Grade: A+
```

Screen Display

Function Interface:

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 2
Enter Student ID: 955002056
Grade: A+
```

Function Name: show_average

Function Steps:

Step 1.

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): |
```

Screen Display

Step 2.

User input: 3

Step 3.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): 3 Enter Student ID: </pre> <p>Screen Display</p>
Step 4.	User input: 955002056
Step 5.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): 3 Enter Student ID: 955002056 Weighted average score: 92.0</pre> <p>Screen Display</p>

Function Interface:

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 3
Enter Student ID: 955002056
Weighted average score: 92.0
```

Function Name: show_rank

Function Steps:

Step 1.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): </pre> <p>Screen Display</p>
Step 2.	<p>User input: 4</p>
Step 3.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): 4 Enter Student ID: </pre> <p>Screen Display</p>
Step 4.	<p>User input: 955002056</p>
Step 5.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): 4 Enter Student ID: 955002056 Rank: 15</pre> <p>Screen Display</p>

Function Interface:

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 4
Enter Student ID: 955002056
Rank: 15
```

Function Name: show_distribution

Function Steps:

Step 1.	<pre>Welcome to the grading system 1) show score 2) show grade letter 3) show average 4) show rank 5) show distribution 6) filter by score 7) add student 8) update grade 9) update grade weight 10) exit program What do you want to do (1-10): </pre> <p>Screen Display</p>
Step 2.	User input: 5
Step 3.	<pre>Grade Distribution: ≥ 90 85-89 80-84 77-79 73-76 70-72 67-69 63-66 60-62 50-59 < 50 A+ A A- B+ B B- C+ C C- D E 29 31 2 0 1 0 0 0 0 0 0</pre> <p>Screen Display</p>

Function Interface:

```
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 5
Grade Distribution:
  ≥ 90    85-89    80-84    77-79    73-76    70-72    67-69    63-66    60-62    50-59    < 50
  A+      A       A-      B+      B       B-      C+      C       C-      D       E
  29      31      2       0       1       0       0       0       0       0       0
```

Function Name: filter_by_score

First line-> Select Command

Second Line-> Input grade

Function Steps:

User input: 6

User input: 80

Function Interface:

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 6
Enter a certain score to filter students:
80
StudentID: Name:      Scores:      Final Score:
962001044  凌宗廷      87 86 98 88 87      88.75
965002038  蘇亨玠      95 89 93 81 83      86.70
965002044  商揚夏      85 86 80 81 88      84.30
966002031  陳建豪      91 95 85 83 90      88.40
975002021  楊祺賢      81 97 90 82 84      85.90
975002026  楊永成      85 90 82 93 85      87.30
975002039  許琇筑      97 84 87 99 89      91.65
975002069  練俊民      99 81 84 91 95      90.85
```


Function Name: add_student

Function Steps:

User input: 7

User input: 109006271, Tuguldur,80,70,60,90,85

(Student ID, Name, Lab1, Lab2, Lab3, Midterm, Final)

Function Interface:

```
Welcome to the grading system
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 7
Enter Student ID, Name, Lab1, Lab2, Lab3, Midterm, Final scores: 109006271, Tuguldur,80,70,60,90,85
Student added successfully.
```

986002026	關裕柏	90	85	89	87	91	88.65
995002901	舒晨馨	82	90	85	84	93	87.45
109006271	Tuguldur	80	70	60	90	85	79.50

Function Name: update_grade

Function Steps:

User input: 8

User input: 962001044

(Enter student ID or name)

User input: 90 86 98 99 87

(Enter Student Scores)

Function Interface:

```
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 8
Enter Student ID or Name to search for: 962001044
Enter new grades for 凌宗廷: 90 86 98 99 87
Grades updated successfully.
```

```
962001044 凌宗廷 90 86 98 99 87
```

Function Name: update_grade_weight

Function Steps:

User input: 9

User input: 10,10,10,25,45

(Enter new grade weights separated by a comma)

Function Interface:

```
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 9
Enter the new grade weights separated by commas (e.g., 15,15,15,25,30): 10,10,10,25,45
```

Function Name: exit_program

Function Steps:

User input: 10

Function Interface:

```
1) show score
2) show grade letter
3) show average
4) show rank
5) show distribution
6) filter by score
7) add student
8) update grade
9) update grade weight
10) exit program
What do you want to do (1-10): 10
Exiting Program
```