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# 1. Problem statement:

1. The program will allow managing a list of scores of each contestant from a contest. The user can add a new contestant’s scores.

# 2. Feature list

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| **Feature** |
| F1. **Add** a new score into the list of scores |
| F2. **Insert** a new score into the list of scores at a given position |
| F3. **Remove** a score from a certain position |
| F4. **Remove** scores from given positions (pos 1 to pos 2) |
| F5. **Replace** an old score with a new score |
| F6. **Print** the list of scores |
| F7. **Print** the scores sorted |
| F8. **Print** the scores that satisfy a given property. |
| F9. **Write** the **average** of the average scores for participants between positions given |
| F10. **Writes** the **lowest** scores of participants between positions given |
| F11. **Establish the podium** |
| F11.1 Writes the n(given) participants who obtained the highest score |
| F11.2 Writes the n(given) participants who obtained the highest score at a certain problem |
| F12. Undo |

## 3. Running scenario

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|  | User | Program | Description |
| a | add 1 2 3 | Shows “command:” | Adds at the end of the list the new score |
| b | List | {'P1': 0, 'P2': 10, 'P3': 5}  {'P1': 2, 'P2': 7, 'P3': 4}  {'P1': 2, 'P2': 8, 'P3': 1}  {'P1': 2, 'P2': 5, 'P3': 4}  {'P1': 9, 'P2': 9, 'P3': 9}  {'P1': 4, 'P2': 0, 'P3': 10}  {'P1': 2, 'P2': 3, 'P3': 4}  {'P1': 5, 'P2': 5, 'P3': 0}  {'P1': 3, 'P2': 2, 'P3': 10}  {'P1': 10, 'P2': 10, 'P3': 10} | Prints the list of scores |
| c | remove 3 |  | Sets the values at the position 4 to 0 |
| d | replace 3 P1 with 5 |  | Replace the first problem of the 4th contestant with 5 |
| e | remove 5 to 7 |  | Sets the contestants from 5 to 7 to 0 |
| f | list sorted | {'P1': 10, 'P2': 10, 'P3': 10}  {'P1': 9, 'P2': 9, 'P3': 9}  {'P1': 5, 'P2': 6, 'P3': 7}  {'P1': 0, 'P2': 10, 'P3': 5}  {'P1': 3, 'P2': 2, 'P3': 10}  {'P1': 2, 'P2': 8, 'P3': 1}  {'P1': 5, 'P2': 5, 'P3': 0}  {'P1': 2, 'P2': 3, 'P3': 4}  {'P1': 1, 'P2': 2, 'P3': 3}  {'P1': 5, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0} | Prints the list sorted |
| g | list < 15 | {'P1': 2, 'P2': 7, 'P3': 4}  {'P1': 2, 'P2': 8, 'P3': 1}  {'P1': 5, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 1, 'P2': 2, 'P3': 3} | Prints the participants with the average score < 15 |
| h | avg 1 to 5 | 3.733333333333333 | Prints the average of the average scores from 1 to 5 |
| i | min 1 to 8 | 0.0 | Prints the minimum score from position 1 to position 8 |
| j | top 4 | {'P1': 10, 'P2': 10, 'P3': 10}  {'P1': 9, 'P2': 9, 'P3': 9}  {'P1': 0, 'P2': 10, 'P3': 5}  {'P1': 3, 'P2': 2, 'P3': 10}  {'P1': 2, 'P2': 7, 'P3': 4} | Prints the top 4 scores |
| k | top 4 P1 | {'P1': 10, 'P2': 10, 'P3': 10}  {'P1': 9, 'P2': 9, 'P3': 9}  {'P1': 5, 'P2': 0, 'P3': 0}  {'P1': 3, 'P2': 2, 'P3': 10} | Prints the first 4 scores with the highest score at the first problem |
| l | remove < 25 | “Changes have been made” | Set the scores of participants having an average score < 25 to 0. |
| m | list | {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 9, 'P2': 9, 'P3': 9}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 10, 'P2': 10, 'P3': 10}  {'P1': 0, 'P2': 0, 'P3': 0} | List |
| n | undo | “The undo was made. Use 'list' to see the scores!” | All the scores modified with “remove < 25” are now restored |
| o | list | {'P1': 0, 'P2': 10, 'P3': 5}  {'P1': 2, 'P2': 7, 'P3': 4}  {'P1': 2, 'P2': 8, 'P3': 1}  {'P1': 5, 'P2': 0, 'P3': 0}  {'P1': 9, 'P2': 9, 'P3': 9}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 0, 'P2': 0, 'P3': 0}  {'P1': 3, 'P2': 2, 'P3': 10}  {'P1': 10, 'P2': 10, 'P3': 10}  {'P1': 1, 'P2': 2, 'P3': 3} |  |
| p | exit |  | Exit the application |

## 4.Tasks

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| ID | Description |
| T1 | **Add** a new score into the list of scores |
| T2 | **Insert** a new score into the list of scores at a given position |
| T3 | **Remove** a score from given positions (Pos1->Pos 2) |
| T4 | **Replace** an old score with a new score |
| T5 | **Remove** a score from a certain position |
| T6 | **Print** the list of scores |
| T7 | **Print** the scores **sorted** |
| T8 | **Print** the scores that satisfy **a given property** |
| T9 | **Write** the **average** of the average scores for participants between positions given |
| T10 | **Writes** the **lowest** scores of participants between positions given |
| T11 | **Establish the podium** |
| T11.1 | Writes the n(given) participants who obtained the highest score |
| T11.2 | Writes the n(given) participants who obtained the highest score at a certain problem |
| T12 | **Undo** |