1. **Addelem Function:**
   * Takes a list **A** and an integer **a** as input.
   * Reads names of students (**elem**) **a** times and appends them to the list **A**.
   * Checks for duplicate entries and prompts the user until a unique entry is provided.
2. **union Function:**
   * Takes two lists **A** and **C**, and their respective lengths **a** and **c**.
   * Extends the list **AUC** with the elements of list **A**.
   * Appends elements from list **C** to **AUC** only if they are not already present in list **A**.
3. **Input and Initialization for Cricket, Badminton, and Football Sets:**
   * Reads the number of students playing Cricket (**a**), Badminton (**b**), and Football (**c**).
   * Calls the **Addelem** function for each set, creating sets **A**, **B**, and **C**.
4. **Construction of Universal Set (U):**
   * Initializes an empty list **U**.
   * Appends elements from sets **A**, **B**, and **C** to form the universal set **U**.
5. **Display Information about Sets:**
   * Prints information about the students playing Cricket, Badminton, and Football.
   * Prints the Universal Set (**U**).
6. **Que 1: Students Playing Both Cricket and Badminton (D):**
   * Initializes an empty list **D**.
   * Appends elements from set **A** to **D** if they are also present in set **B**.
   * Prints the list of students playing both Cricket and Badminton.
7. **Que 2: Students Playing Either Cricket or Badminton But Not Both (E):**
   * Initializes an empty list **E**.
   * Appends elements from set **A** to **E** if they are not in the intersection of sets **A** and **B**.
   * Appends elements from set **B** to **E** if they are not in the intersection of sets **A** and **B**.
   * Prints the list of students playing either Cricket or Badminton but not both.
8. **Que 3: Students Playing Neither Cricket nor Badminton (F):**
   * Initializes an empty list **F**.
   * Calls the **union** function to create the union set **AUB** of sets **A** and **B**.
   * Appends elements from the Universal Set **U** to **F** if they are not in the union set **AUB**.
   * Prints the number and list of students playing neither Cricket nor Badminton.
9. **Que 4: Students Playing Cricket and Football But Not Badminton (G):**
   * Initializes an empty list **AUC** and calls the **union** function to create the union set of sets **A** and **C**.
   * Initializes an empty list **G**.
   * Appends elements from the union set **AUC** to **G** if they are not in set **B**.
   * Prints the number and list of students playing Cricket and Football but not Badminton.

Algorithm:

1. \*\*Define the Addelem function:\*\*

- Takes a list A and an integer a as parameters.

- Iterates a times to get input for the names of students playing a particular sport.

- Checks for duplicate entries and asks for input again if a duplicate is found.

- Appends the unique entries to the list A.

2. \*\*Define the union function:\*\*

- Takes two lists AUC and C, and two integers A and c as parameters.

- Extends AUC with the elements of list A.

- Appends elements from list C to AUC if they are not already present in list A.

3. \*Input for Cricket players:\*

- Create an empty list A.

- Take input for the number of students playing Cricket (a).

- Call Addelem(A, a) to add unique elements to list A.

- Print the list of students playing Cricket.

4. \*Input for Badminton players:\*

- Create an empty list B.

- Take input for the number of students playing Badminton (b).

- Call Addelem(B, b) to add unique elements to list B.

- Print the list of students playing Badminton.

5. \*Input for Football players:\*

- Create an empty list C.

- Take input for the number of students playing Football (c).

- Call Addelem(C, c) to add unique elements to list C.

- Print the list of students playing Football.

6. \*\*Construct Universal Set (U):\*\*

- Create an empty list U.

- Iterate through lists A, B, and C to construct the universal set without duplicates.

- Print the universal set.

7. \*\*Question 1 - List of students playing both Cricket and Badminton (D):\*\*

- Create an empty list D.

- Iterate through list A and append elements that are also present in list B.

- Print the list of students playing both Cricket and Badminton.

8. \*\*Question 2 - List of students playing either Cricket or Badminton but not both (E):\*\*

- Create an empty list E.

- Iterate through lists A and B and append elements not present in list D.

- Print the list of students playing either Cricket or Badminton but not both.

9. \*\*Question 3 - List of students playing neither Cricket nor Badminton (F):\*\*

- Create an empty list AUB.

- Call union(AUB, A, B, b) to get the union of lists A and B.

- Create an empty list F containing elements not present in the union of A and B.

- Print the list and the count of students playing neither Cricket nor Badminton.

10. \*\*Question 4 - List of students playing Cricket and Football but not Badminton (G):\*\*

- Create an empty list AUC.

- Call union(AUC, A, C, c) to get the union of lists A and C.

- Create an empty list G containing elements not present in list B.

- Print the list and the count of students playing Cricket and Football but not Badminton.

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