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WAP to implement Hashing using Linear Probing with chaining without replacement.(Hash Function: Key % table size)

Code:

```
#include <stdio.h>
#define size 10
#define h(x) x % size

void insert(int data[], int flag[], int chain[], int x) {
   int i = 0, j, start;
   start = h(x);

   while (flag[start] && i < size) {
      if (data[start] % size == x % size) {
         break;
      }
      i++;
      start = (start + 1) % size;
   }

   if (i == size) {
      printf("Hash Table is Full");
      return;
   }

   j = start;
   while (chain[j] != -1) {
      j = chain[j];
   }
```

```
    while (flag[j] && j < size) {
        j = (j + 1) % size;
    }

    if (j == size) {
        printf("Hash Table is Full");
        return;
    }

    data[j] = x;
    flag[j] = 1;

    if (j != start) {
        chain[j] = chain[start];
        chain[start] = j;
    }
}

void display(int data[], int flag[], int chain[]) {
    int i;
    for (i = 0; i < size; i++) {
        if (flag[i]) {
            printf("(%d) %d %d \n", i, data[i], chain[i]);
        } else {
            printf("(%d) -- %d \n", i, chain[i]);
        }
    }
}

int main() {
    int data[size], flag[size], chain[size], i, x, op;

    for (i = 0; i < size; i++) {
        flag[i] = 0;
        chain[i] = -1;
    }
```

```
    printf("Enter the number of keys to be inserted: ");
    scanf("%d", &op);

    for (i = 0; i < op; i++) {
        printf("Enter key to be inserted: ");
        scanf("%d", &x);
        insert(data, flag, chain, x);
    }

    printf("\nHash Table:\n");
    display(data, flag, chain);
    return 0;
}
```

Output: