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Digital Assignment

```
#include <stdio.h>
#include<stdlib.h>
int main()
{
	printf("\n\nLinear Probing:\n");
	int n=0;
	printf("\nEnter the size of array\n");
	scanf("%d",&n);
	int A1[n];
	int A2[n];
	int A3[n];
	for(int i = 0; i<n; i++)
	{
		A1[i]=A2[i]=A3[i]=NULL;
	}
	int key,index,i,h;
	for(int j=0; j<n; j++)
	{
		printf("\nEnter a value to insert: \n");
		scanf("%d",&key);
		h=key%n;
		for(i=0;i<n;i++)
			{
			index=(h+i)%n;
			if(A1[index] == NULL)
				{
					A1[index]=key;
					break;
				}
			}
		if(i == n)
		printf("\nElement cannot be inserted\n");
	}
	i=0;
	printf("\nElements in the hash table:\n");
	for(i=0;i< n; i++)
	{
		printf("\nat %d \t value =    %d",i,A1[i]);
	}
	printf("\n\nQuadratic Probing:\n");
	for(int j=0; j<n; j++)
	{
		printf("\nEnter a value to insert\n");
		scanf("%d",&key);
		h=key%n;
		for(i=0;i<n;i++)
			{
			index=(h+(i*i))%n;
		if(A2[index] == NULL)
			{
				A2[index]=key;
				break;
			}
```

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                }
        if(i == n)
        printf("\nIt can't be inserted\n");
    }
    printf("\nElements in the hash table are: \n");
    for(i=0;i< n; i++)
    {
        printf("\nat index %d \t value =    %d",i,A2[i]);
    }
    printf("\n\nDouble Hashing:\n");
    int hash2;
    int prime;
    for(int j =n; j>=1; j--)
    {
        int c=0;
        for(int i = 1; i<=n; i++)
        {
            if(j%i==0)
            {
                c++;
            }
        }
        if(c==2)
        {
            prime = j;
            break;
        }
    }
    for(int j=0; j<n; j++)
    {
        printf("\nEnter a value to insert\n");
        scanf("%d",&key);
        h=key%n;
        hash2 = prime-(key%prime);
        for(i=0;i<n;i++)
            {
            index=(h+(i*hash2))%n;
        if(A3[index] == NULL)
            {
                A3[index]=key;
                break;
            }
            }
        if(i == n)
        printf("\nIt can't be inserted\n");
    }
    for(i=0;i< n; i++)
    {
        printf("\nat %d \t value =    %d",i,A3[i]);
    }
     return 0;
}
```

```
Linear Probing:

Enter the size of array
4

Enter a value to insert:
45

Enter a value to insert:
45

Enter a value to insert:
6

Enter a value to insert:
21

Elements in the hash table:

at 0     value =  21
at 1     value =  45
at 2     value =  45
at 3     value =  6

Quadratic Probing:

Enter a value to insert
49

Enter a value to insert
12

Enter a value to insert
25

Enter a value to insert
5

It can't be inserted

Elements in the hash table are:

at index 0       value =  12
at index 1       value =  49
at index 2       value =  25
at index 3       value =  0

Double Hashing:

Enter a value to insert
17

Enter a value to insert
66

Enter a value to insert
9

Enter a value to insert
2

at 0     value =  9
at 1     value =  17
at 2     value =  66
at 3     value =  2
```