**Linear Search**

**Algorithm of linear search:**

Linear Search (Array A, Value x)

Step 1: Set i to 1

Step 2: if i > n then go to step 7

Step 3: if A[i] = x then go to step 6

Step 4: Set i to i + 1

Step 5: Go to Step 2

Step 6: Print Element x Found at index i and go to step 8

Step 7: Print element not found

Step 8: Exit

**Program of linear search using array:**

#include <stdio.h>

int main()

{

int array[30], search, i, n;

printf("Enter number of elements in array\n");

scanf("%d", &n);

printf("Enter %d integer(s)\n", n);

for (i = 0; i < n; i++)

scanf("%d", &array[i]);

printf("Enter a number to search\n");

scanf("%d", &search);

for (i = 0; i < n; i++)

{

if (array[i] == search){

printf("%d is present at location %d.\n", search, i+1);

break; }

}

if (i == n)

printf("%d isn't present in the array.\n", search);

return 0;

}

**Program of linear search using linked list:**

#include <stdio.h>

#include <stdlib.h>

struct node

{

int num;

struct node \*next;

};

void create(struct node \*\*);

int search(struct node \*, int);

void release(struct node \*\*);

void display(struct node \*);

int main()

{

struct node \*p = NULL;

int key, result;

printf("Enter data into the list\n");

create(&p);

printf("Displaying the nodes in the list:\n");

display(p);

printf("Enter key to search in the list: ");

scanf("%d", &key);

result = search(p, key);

if (result)

{

printf("%d found in the list.\n", key);

}

else

{

printf("%d not found in the list.\n", key);

}

release(&p);

return 0;

}

int search(struct node \*head, int key)

{

while (head != NULL)

{

if (head->num == key)

{

return 1;

}

head = head->next;

}

return 0;

}

void create(struct node \*\*head)

{

int c, ch;

struct node \*temp, \*rear;

do

{

printf("Enter number: ");

scanf("%d", &c);

temp = (struct node \*)malloc(sizeof(struct node));

temp->num = c;

temp->next = NULL;

if (\*head == NULL)

{

\*head = temp;

}

else

{

rear->next = temp;

}

rear = temp;

printf("Do you wish to continue [1/0]: ");

scanf("%d", &ch);

} while (ch != 0);

printf("\n");

}

void display(struct node \*p)

{

while (p != NULL)

{

printf("%d\t", p->num);

p = p->next;

}

printf("\n");

}

void release(struct node \*\*head)

{

struct node \*temp = \*head;

\*head = (\*head)->next;

while ((\*head) != NULL)

{

free(temp);

temp = \*head;

(\*head) = (\*head)->next;

}

}