**Implementation of Stack Using Array**

// Implementing stack using array

#include <stdio.h>

#include <stdlib.h>

void push();

void pop();

void peek();

void isEmpty();

void isFull();

void display();

void search();

int stack[100], top = -1, num;

int main()

{

  printf("\nEnter the size of the stack: ");

  scanf("%d", &num);

  int ch;

  while (1)

  {

    printf("\nStack Operations: ");

    printf("\n1. push\n2. pop\n3. peek\n4. isEmpty\n5. isFull\n6. display\n7. search\n8. exit");

    printf("\nEnter your choice: ");

    scanf("%d", &ch);

    switch (ch)

    {

    case 1:

      push();

      break;

    case 2:

      pop();

      break;

    case 3:

      peek();

      break;

    case 4:

      isEmpty();

      break;

    case 5:

      isFull();

      break;

    case 6:

      display();

      break;

    case 7:

      search();

      break;

    case 8:

      printf("\nExited\n");

      exit(0);

      break;

    default:

      printf("\nInvalid choice, try again.\n");

    }

  }

  return 0;

}

void push()

{

  if (top == (num - 1))

    printf("\nStack is full\n");

  else

  {

    int x;

    printf("\nEnter value: ");

    scanf("%d", &x);

    top++;

    stack[top] = x;

    printf("\nPushed\n");

  }

}

void pop()

{

  if (top == 0)

    printf("\nStack is empty\n");

  else

  {

    int x;

    x = stack[top];

    top--;

    printf("\nPoped %d\n", x);

  }

}

void peek()

{

  if (top == 0)

    printf("\nStack is empty\n");

  else

    printf("\nPeek element: %d\n", stack[top]);

}

void isEmpty()

{

  printf("\nisEmpty: %s\n", top == 0 ? "true" : "false");

}

void isFull()

{

  printf("\nisFull: %s\n", top == (num - 1) ? "true" : "false");

}

void display()

{

  if (top == 0)

  {

    printf("\nThere are no elements in the stack\n");

    return;

  }

  printf("\nElements in the stack are: \n");

  for (int i = 0; i < num; i++)

  {

    if (i <= top)

      printf("%d ", stack[i]);

    else

      printf("- ");

  }

  printf("\n");

}

void search()

{

  if (top == 0)

  {

    printf("\nThere are no elements in the stack\n");

    return;

  }

  int key;

  printf("\nEnter the key value: ");

  scanf("%d", &key);

  int flag = 1;

  for (int i = 0; i <= top; i++)

  {

    if (stack[i] == key)

    {

      printf("Found at position: %d\n", i + 1);

      flag = 0;

    }

  }

  if (flag)

    printf("Key not found\n");

}