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# include<stdio.h>
# include<stdlib.h>

struct node
{
    int data;
    struct node *next;
};
//*****
struct node* createnode()
{
    int data;
    struct node *newnode = NULL;
    newnode = (struct node *)malloc(sizeof(struct node));
    if(newnode == NULL)
    {
        printf("Memory not allocated ==> overflow!!!!\n");
    }
    else
    {
        printf("Enter Data ==> ");
        scanf("%d",&data);
        newnode->data = data;
        newnode->next = NULL;
    }
    return newnode;
}
//*****
int IS_underflow(struct node*top)
{
    if(top == NULL)
    {
        printf("STACK UNDERFLOW!!!!!!\n");
        return 0;
    }
    else
    {
        printf("stack is not underflow you can insert data\n");
        return 1;
    }
}
//*****
int IS_overflow()
{
    struct node* newnode = NULL;
    newnode = (struct node *)malloc(sizeof(struct node));
    if(newnode == NULL)
    {
        printf("STACK OVERFLOW!!!!\n");
        return 0;
    }
    else
    {
        printf("There is space inside stack\n");
        return 1;
    }
}
//*****
void Push(struct node**top)
{
    struct node * newnode = *top;

    if(IS_overflow())
    {
        if(newnode == NULL)
        {

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    newnode = createnode();
    *top = newnode;
}

else
{
    newnode = createnode();
    newnode->next = *top;
    *top = newnode;
}
}
}

//*****
void Display(struct node * top)
{
    int check = IS_underflow(top);
    if(check == 1)
    {
        while(top!=NULL)
        {
            printf("%d\n",top->data);
            top = top->next;
        }
    }
}
//*****
void Pop(struct node **top)
{
    int check = IS_underflow(*top);
    if(check == 1)
    {
        struct node *newnode = NULL;
        newnode = *top;
        *top = (*top)->next;
        printf("%d is popped out\n",newnode->data);
        free(newnode);
    }
}
//*****
void main()
{
    int choice;
    struct node*top =NULL;
    do
    {
        printf("1.PUSH\n2.POP\n3.DISPLAY\n4.ISUNDERFLOW\n5.ISOVERFOLW\n0.EXIT\n*****\nPlese
        Enter your choice\n");
        scanf("%d",&choice);
        switch(choice)
        {
            case 1: Push(&top);
                    break;
            case 2: Pop(&top);
                    break;
            case 3: Display(top);
                    break;
            case 4: IS_underflow(top);
                    break;
            case 5:IS_overflow();
                    break;
        }
    }while(choice != 0);
}

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}