STACK:

```
#include <stdio.h>
void push();
void pop();
void peek();
int N=5;
int stack[5];
int top=-1;
int main()
{
   int ch;
   do
   {
      printf("Enter your choice:1(push/2(pop)/3(peek)/4(exit): /n");
      scanf("%d",&ch);
      switch(ch)
      {
         case 1:
         push();
         break;

         case 2:
         pop();
         break;

         case 3:
         peek();
         break;
```

```
            case 4:
            break;

            default:
            printf("Choice is out of range");
            break;
        }
    }
    while(ch!=4);
    return 0;
}
void push()
{
    int x;
    printf("Enter data: ");
    scanf("%d",&x);
    if(top==N-1)
    {
        printf("overflow,cannot enter data\n");
    }
    else
    {
        top++;
    stack[top]=x;
}
}
void pop()
{
    int item;
    if (top==-1)
```

```
{
   printf("underflow,stack is empty\n");
}
else
{
   item=stack[top];
   top--;
   printf("%d",item);
   printf("\n");
}
}
void peek()
{
   if(top==-1)
   {
      printf("underflow,\n");
   }
   else
   {
      printf("%d",stack[top]);
      printf("\n");
   }
}
```

OUTPUT:

```
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
1
Enter data: 2
2 pushed into the stack
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
1
Enter data: 4
4 pushed into the stack
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
1
Enter data: 5
5 pushed into the stack
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
1
Enter data: 7
7 pushed into the stack
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
1
Enter data: 10
10 pushed into the stack
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
1
Enter data: 12
Overflow,cannot enter data
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
2
Popped item: 10
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
2
Popped item: 7
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
2
Popped item: 5
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
2
Popped item: 4
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
2
Popped item: 2
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
2
Underflow,the stack is empty
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
3
Underflow
Enter your choice:1(push/2(pop)/3(peek)/4(exit):
4
Exiting....
```

OBSERVATION:

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1. WAP to simulate the working of stack using an assay with the following:
a. Push
b. pop
c. peek

~~The~~ #

=>
```
#include <stdio.h>
void push();
void pop();
void peek();
int N=5;
int stack[5];
int top=-1;
int main()
{
  int ch;
  do
  {
    printf("Enter your choice: 1(push)/
            2(pop)/3(peek)/4(exit)
            :\n");
    scanf("%d", &ch);
    switch(ch)
    {
      case 1:
      push();
      break;
      case 2:
      pop()
      break;
```

```
        case 3:
        peek();
        break;

        case 4:
        break;

        default:
        printf("Choice is out of range");
        break;
    }
}
while(ch!=4);
return 0;
}

void push()
{
    int x;
    printf("Enter data: ");
    scanf("%d", &x);
    if(top==N-1)
    {
        printf("Overflow, cannot enter data\n");
    }
    else
    {
        top++;
        stack[top]=x;
    printf("%d pushed to the stack,\n", x);
    }
}
```

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```
void pop ()
{
   int item;
   if (top == -1)
   {
     printf ("underflow, stack is empty \n");
   }
   else
     {
        item = stack[top];
        top--;
        printf ("%d", item); printf ("poped item: %d\n", item);
        printf ("\n");
     }
}

void peek()
{
   if (top == -1)
     {
        printf ("underflow, stack is empty \n");
     }
   else
     {
        printf ("Top item: %d", stack[top]);
        printf ("\n");
     }
}
```

Output :-

```
Enter your choice : 1(push) / 2(pop) / 3 (peek) / 4(exit):
1
Enter data : 2
2 pushed to the stack
Enter your choice : 1(push) / 2 (pop) / 3 (peek) / 4 (exit):
1
Enter data : 4
4 pushed to the stack
Enter your choice : 1(push) / 2(pop) / 3(peek) / 4(exit):
1
Enter data : 5
5 pushed to the stack
Enter your choice : 1(push) / 2(pop) / 3(peek) / 4 (exit):
1
Enter data : 7
7 pushed to the stack
Enter your choice : 1(push) / 2(pop) / 3(peek) / 4 (exit):
1
Enter data : 10
10 pushed to the stack
Enter your choice : 1(push) / 2(pop) / 3 (peek) / 4 (exit)
1
Enter data : 12
Overflow, cannot enter data
Enter your choice : 1(push) / 2(pop) / 3 (peek) / 4 (exit):
2
Popped item : 10
Enter your choice : 1(push) / 2(pop) / 3 (peek) / 4 (exit):
2
popped item : 7
```

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Enter your choice: 1(push)/2(pop)/3(peek)/4(exit):
2
Popped item: 5
Enter your choice: 1(push)/2(pop)/3(peek)/4(exit):
2
Popped item: 4
Enter your choice: 1(push)/2(pop)/3(peek)/4(exit):
2
Popped item: 2
Enter your choice: 1(push)/2(pop)/3(peek)/4(exit):
2
Underflow, the stack is empty.

Enter your choice: 1(push)/2(pop)/3(peek)/4(exit):
3
Underflow, the stack is empty

Enter your choice: 1(push)/2(pop)/3(peek)/4(exit):
4
Exiting...
~~Process returned 0.~~

22/9.