

EXPERIMENT N0-7

WRITE A PYTHON PROGRAM TO BUILD PACKAGE AND MODULE FOR STACK AND QUEUE

SOURCE CODE:-

Main.py:

```
import college_prac.stack
import college_prac.queue

q=college_prac.queue.Queue()
s=college_prac.stack.Stack()
if __name__ == "__main__":
    while (True):
        print("***** MENU *****")
        print("1: STACK")
        print("2: QUEUE")
        x=int(input("ENTER YOUR CHOICE"))
        if(x==1):
            while (True):
                print("***** STACK *****")
                print("1: PUSH")
                print("2: POP")
                print("3: PEEK")
                print("4: DISPLAY")
                op = int(input("ENTER YOUR CHOICE:"))
                if op == 1:
                    s.push()
```

```

elif op == 2:
    s.pop()
elif op == 3:
    s.peek()
elif op == 4:
    s.print()
else:
    print("wrong input")
print("Press q to quit and c to continue:", end=" ")
ch = ""
while (ch != "c" and ch != "q"):
    ch = input()
    if ch == "q":
        exit()

    elif ch == "c":
        continue
elif(x==2):
    while (True):
        print("***** QUEUE *****")
        print("1: ENQUEUE")
        print("2: DEQUEUE")
        print("3: PEEK")
        print("4: DISPLAY")
        op = int(input("ENTER YOUR CHOICE:"))
        if op == 1:
            q.enqueue()

```

```

elif op == 2:
    q.dequeue()
elif op == 3:
    q.peak()
elif op == 4:
    q.print()
else:
    print("wrong input")
print("Press q to quit and c to continue:", end=" ")
ch = ""
while (ch != "c" and ch != "q"):
    ch = input()
    if ch == "q":
        exit()

```

stack.py:

```

class Stack:
    stack=[]
    def push(self):
        s1=int(input("entre the number to push:"))
        self.stack.append(s1)

    def pop(self):
        if(self.isempty()):
            print("stack is empty")
        else:
            s2=self.stack.pop()
            print(f'{s2} is popped')

```

```
def peek(self):
    if (self.isempty()):
        print("stack is empty")
    else:
        s3=self.stack[-1]
        print(f'{s3} is peek element')
```

```
def isempty(self):
    if self.stack == []:
        return True
    else:
        return False
```

```
def print(self):
    if (self.isempty()):
        print("stack is empty")
    else:
        print("element of stack are:")
        for i in self.stack:
            print(i)
```

queue.py:

```
class Queue:
```

```
    q=[]
```

```
    def enqueue(self):
```

```
        s1=int(input("entre the number to push:"))
```

```
        self.q.append(s1)
```

```
    def dequeue(self):
```

```
        if(self.isempty()):
```

```
            print("queue is empty")
```

```
        else:
```

```
            s2=self.q.pop(0)
```

```
            print(f'{s2} is dequeued')
```

```
    def peek(self):
```

```
        if (self.isempty()):
```

```
            print("queue is empty")
```

```
        else:
```

```
            s3=self.q[0]
```

```
            print(f'{s3} is peek element')
```

```
    def isempty(self):
```

```
        if self.q == []:
```

```
            return True
```

```
        else:
```

```
            return False
```

```

def print(self):
    if (self.isempty()):
        print("queue is empty")
    else:
        print("element of queue are:")
        for i in self.q:
            print(i)

```

OUTPUT:

STACK:

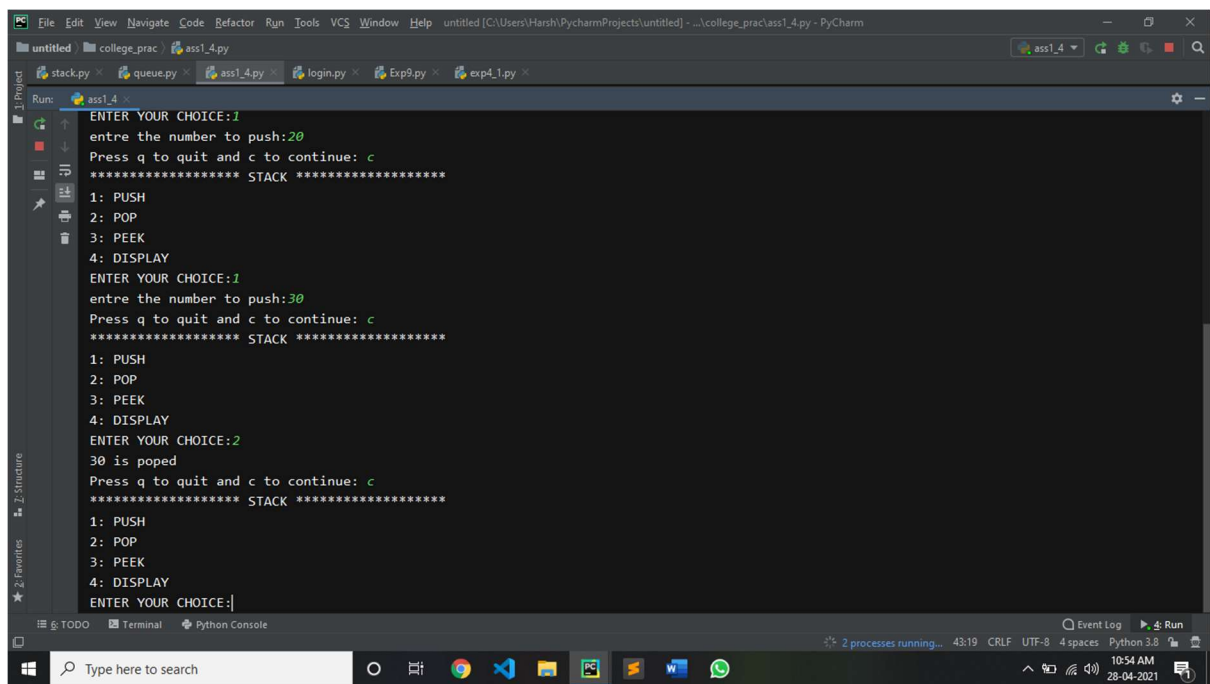
PUSH:

```

C:\python38\python.exe C:/Users/Harsh/PycharmProjects/untitled/college_prac/ass1_4.py
***** MENU *****
1: STACK
2: QUEUE
ENTER YOUR CHOICE!
***** STACK *****
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:1
entre the number to push:10
Press q to quit and c to continue: c
***** STACK *****
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:1
entre the number to push:20
Press q to quit and c to continue: c
***** STACK *****
1: PUSH
2: POP
3: PEEK

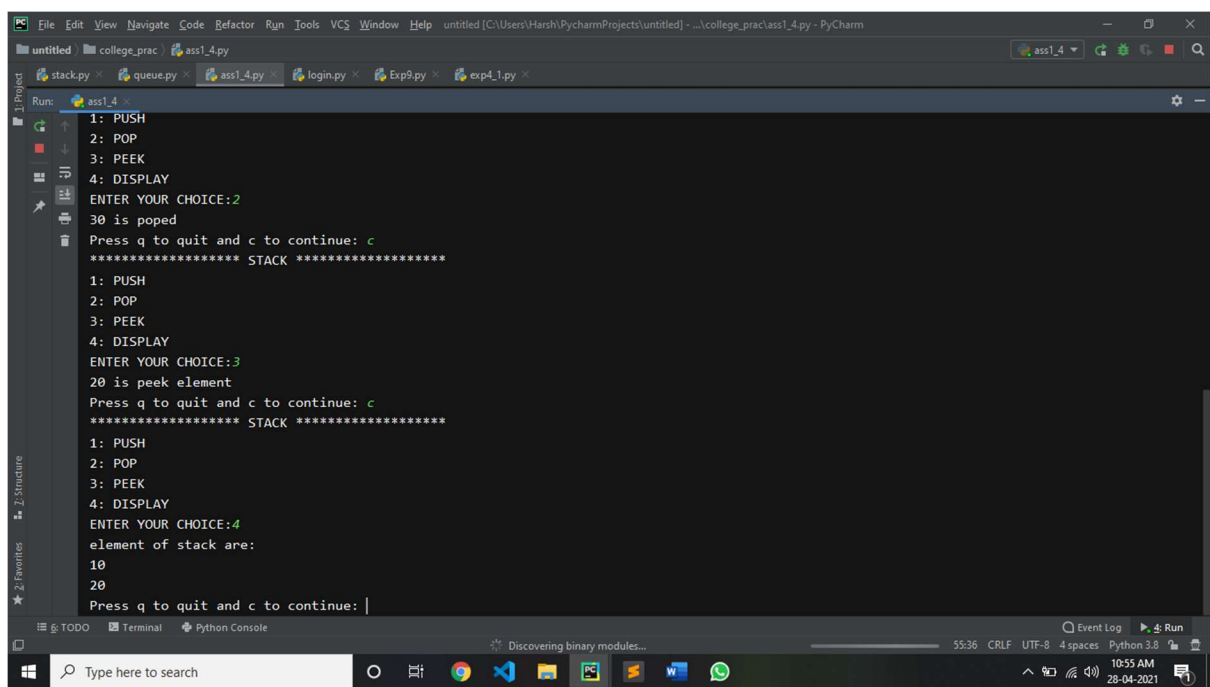
```

POP:



```
File Edit View Navigate Code Refactor Run Tools VCS Window Help untitled [C:\Users\Harsh\PycharmProjects\untitled] - ...college_prac1_4.py - PyCharm
untitled college_prac ass1_4.py
stack.py queue.py ass1_4.py login.py Exp9.py exp4_1.py
Run: ass1_4
ENTER YOUR CHOICE:1
entre the number to push:20
Press q to quit and c to continue: c
***** STACK *****
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:1
entre the number to push:30
Press q to quit and c to continue: c
***** STACK *****
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:2
30 is popped
Press q to quit and c to continue: c
***** STACK *****
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:|
```

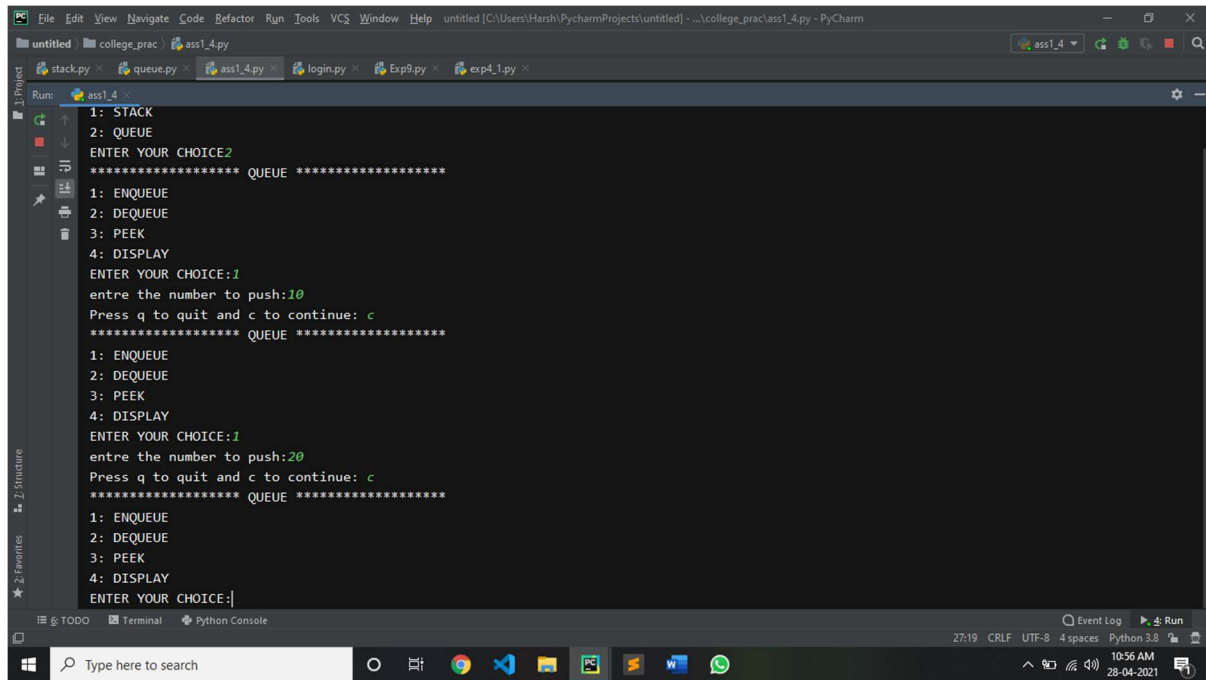
PEEK AND DISPLAY:



```
File Edit View Navigate Code Refactor Run Tools VCS Window Help untitled [C:\Users\Harsh\PycharmProjects\untitled] - ...college_prac1_4.py - PyCharm
untitled college_prac ass1_4.py
stack.py queue.py ass1_4.py login.py Exp9.py exp4_1.py
Run: ass1_4
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:2
30 is popped
Press q to quit and c to continue: c
***** STACK *****
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:3
20 is peek element
Press q to quit and c to continue: c
***** STACK *****
1: PUSH
2: POP
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:4
element of stack are:
10
20
Press q to quit and c to continue: |
```

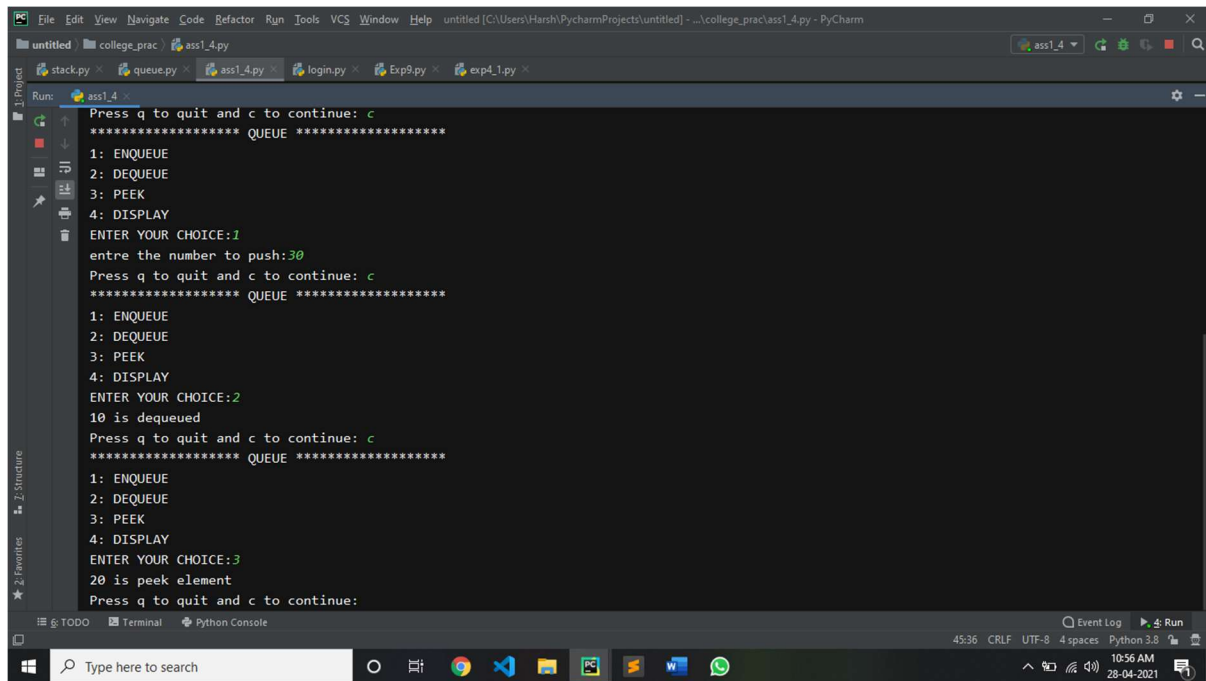
QUEUE:

ENQUEUE:



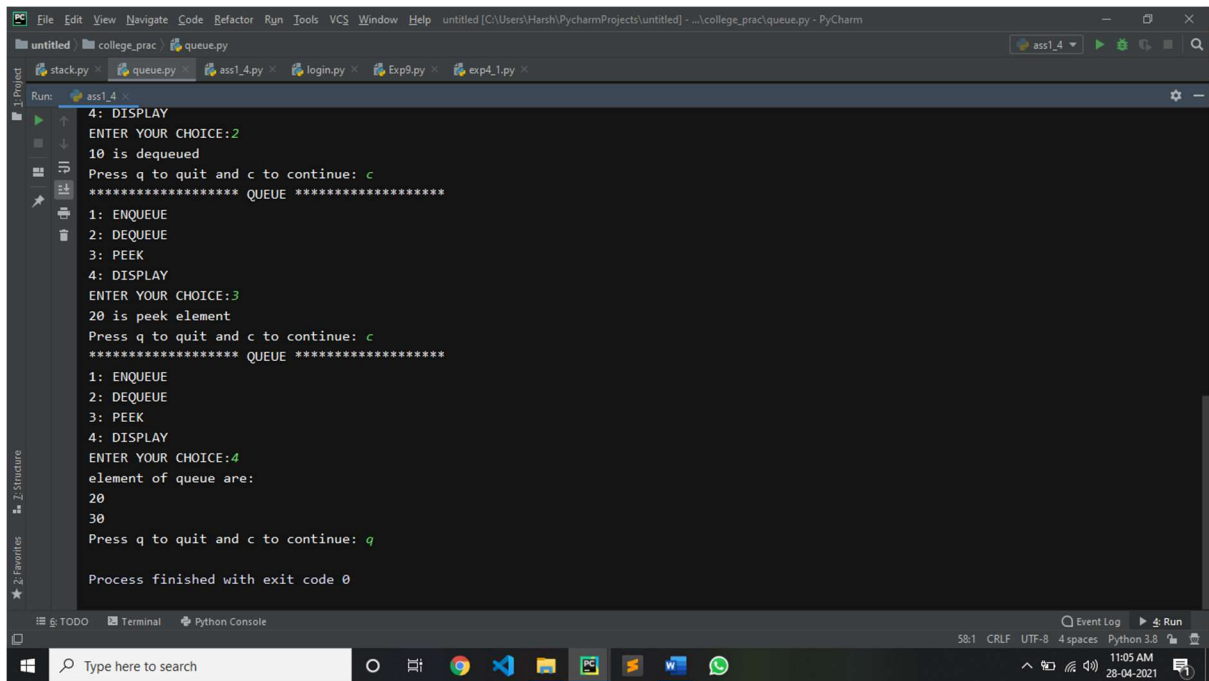
```
File Edit View Navigate Code Refactor Run Tools VCS Window Help untitled [C:\Users\Harsh\PycharmProjects\untitled] - college_prac\ass1_4.py - PyCharm
untitled college_prac ass1_4.py
stack.py queue.py ass1_4.py login.py Exp9.py exp4_1.py
Run: ass1_4
1: STACK
2: QUEUE
ENTER YOUR CHOICE:2
***** QUEUE *****
1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:1
entre the number to push:10
Press q to quit and c to continue: c
***** QUEUE *****
1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:1
entre the number to push:20
Press q to quit and c to continue: c
***** QUEUE *****
1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:|
Event Log Run
27:19 CRLF UTF-8 4 spaces Python 3.8
Type here to search 10:56 AM 28-04-2021
```

DEQUEUE:



```
File Edit View Navigate Code Refactor Run Tools VCS Window Help untitled [C:\Users\Harsh\PycharmProjects\untitled] - college_prac\ass1_4.py - PyCharm
untitled college_prac ass1_4.py
stack.py queue.py ass1_4.py login.py Exp9.py exp4_1.py
Run: ass1_4
Press q to quit and c to continue: c
***** QUEUE *****
1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:1
entre the number to push:30
Press q to quit and c to continue: c
***** QUEUE *****
1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:2
10 is dequeued
Press q to quit and c to continue: c
***** QUEUE *****
1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:3
20 is peek element
Press q to quit and c to continue:
Event Log Run
45:36 CRLF UTF-8 4 spaces Python 3.8
Type here to search 10:56 AM 28-04-2021
```


PEEK AND DISPLAY:



The image shows a PyCharm IDE window with a 'Run' console. The console output displays the execution of a program that implements a queue with operations: ENQUEUE, DEQUEUE, PEEK, and DISPLAY. The program uses a list to represent the queue and a variable to track the front element. The output shows the queue state after each operation and the element being peeked or displayed.

```
4: DISPLAY
ENTER YOUR CHOICE:2
10 is dequeued
Press q to quit and c to continue: c
***** QUEUE *****

1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:3
20 is peek element
Press q to quit and c to continue: c
***** QUEUE *****

1: ENQUEUE
2: DEQUEUE
3: PEEK
4: DISPLAY
ENTER YOUR CHOICE:4
element of queue are:
20
30
Press q to quit and c to continue: q

Process finished with exit code 0
```