# stack\_array\_books.py

class Stack:

def \_\_init\_\_(self, capacity):

self.capacity = capacity

self.items = [None] \* capacity # array

self.top = -1 # empty stack

def is\_full(self):

return self.top == self.capacity - 1

def is\_empty(self):

return self.top == -1

def push(self, title):

if self.is\_full():

print("Error: Stack is full (overflow).")

return

self.top += 1

self.items[self.top] = title

print(f"Pushed: {title}")

def pop(self):

if self.is\_empty():

print("Error: Stack is empty (underflow).")

return

title = self.items[self.top]

self.top -= 1

print(f"Popped: {title}")

return title

def peek(self):

if self.is\_empty():

print("Error: Stack is empty.")

return

print(f"Top element: {self.items[self.top]}")

return self.items[self.top]

def display(self):

if self.is\_empty():

print("Stack is empty.")

else:

print("Stack (top -> bottom):")

for i in range(self.top, -1, -1):

print(" ", self.items[i])

def main():

capacity = 5 # change if you want

stack = Stack(capacity)

menu = """

1. Push (add book title)

2. Pop (remove top book)

3. Peek (see top book)

4. Display stack

5. Exit

"""

while True:

print(menu)

choice = input("Enter your choice: ").strip()

if choice == '1':

title = input("Enter book title: ")

stack.push(title)

elif choice == '2':

stack.pop()

elif choice == '3':

stack.peek()

elif choice == '4':

stack.display()

elif choice == '5':

print("Bye!")

break

else:

print("Invalid choice. Try again.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

Output

1. Push (add book title)

2. Pop (remove top book)

3. Peek (see top book)

4. Display stack

5. Exit

Enter your choice: 1

Enter book title: The hobbit

Pushed: The hobbit

1. Push (add book title)

2. Pop (remove top book)

3. Peek (see top book)

4. Display stack

5. Exit

Enter your choice: 2

Popped: The hobbit

1. Push (add book title)

2. Pop (remove top book)

3. Peek (see top book)

4. Display stack

5. Exit

Enter your choice: 5

Bye!