12a.

"""

Write a menu driven program in python to perform basic mathematical operations on two polynomials or integers using NumPy.

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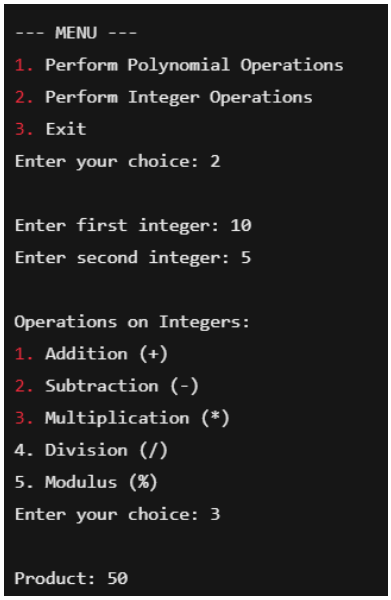
"""

```
import numpy as np
def polynomial_operations():
    print("\nEnter coefficients of first polynomial (space-separated): ")
    poly1 = np.array([int(x) for x in input().split()])
    print("Enter coefficients of second polynomial (space-separated): ")
    poly2 = np.array([int(x) for x in input().split()])
    print("\nOperations on Polynomials:")
    print("1. Addition")
    print("2. Subtraction")
    print("3. Multiplication")
    print("4. Division")
    choice = int(input("Enter your choice: "))
    if choice == 1:
        result = np.polyadd(poly1, poly2)
        print("Sum of Polynomials:", np.poly1d(result))
    elif choice == 2:
        result = np.polysub(poly1, poly2)
        print("Difference of Polynomials:", np.poly1d(result))
    elif choice == 3:
        result = np.polymul(poly1, poly2)
        print("Product of Polynomials:", np.poly1d(result))
    elif choice == 4:
        quotient, remainder = np.polydiv(poly1, poly2)
```

```
        print("Quotient:", np.poly1d(quotient))
        print("Remainder:", np.poly1d(remainder))
    else:
        print("Invalid choice! Please try again.")
def integer_operations():
    a = int(input("\nEnter first integer: "))
    b = int(input("Enter second integer: "))
    print("\nOperations on Integers:")
    print("1. Addition (+)")
    print("2. Subtraction (-)")
    print("3. Multiplication (*)")
    print("4. Division (/)")
    print("5. Modulus (%)")
    choice = int(input("Enter your choice: "))
    if choice == 1:
        print(f"Sum: {a + b}")
    elif choice == 2:
        print(f"Difference: {a - b}")
    elif choice == 3:
        print(f"Product: {a * b}")
    elif choice == 4:
        if b != 0:
            print(f"Quotient: {a / b}")
        else:
            print("Error: Division by zero!")
    elif choice == 5:
        if b != 0:
            print(f"Modulus: {a % b}")
        else:
```

```
            print("Error: Division by zero!")
    else:
        print("Invalid choice! Please try again.")
def main():
    while True:
        print("\n--- MENU ---")
        print("1. Perform Polynomial Operations")
        print("2. Perform Integer Operations")
        print("3. Exit")
        choice = int(input("Enter your choice: "))
        if choice == 1:
            polynomial_operations()
        elif choice == 2:
            integer_operations()
        elif choice == 3:
            print("Exiting the program. Goodbye!")
            break
        else:
            print("Invalid choice! Please enter a valid option.")
if __name__ == "__main__":
    main()
```

Output



12b.

"""

How to get the common items between two python numpy arrays?

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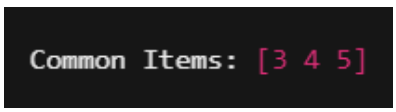
"""

```
import numpy as np
# Define two NumPy arrays
arr1 = np.array([1, 2, 3, 4, 5])
arr2 = np.array([3, 4, 5, 6, 7])
# Find common elements
common_items = np.intersect1d(arr1, arr2)
print("Common Items:", common_items)
```

Output:



12c.

"""

How to limit the number of items printed in output of numpy array?

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"""

```
import numpy as np
# Create a large NumPy array
arr = np.arange(100)
# Set print options to limit output
np.set_printoptions(threshold=10)
print(arr)
```

OUTPUT:

```
[ 0  1  2 ... 97 98 99]
```