**Practical no. – 3**

**Aim:** Write a program to do the following:

1. Enter a vector u as a n-list
2. Enter another vector v as a n-list
3. Find the vector for different values of a and b

**Code:**

def add(u,v,a,b) : return[a\*u[i] + b\*v[i] for i in range(len(u))]

u = [1,2,3,4]

v = [4,5,6,7]

a = 2

b = 4

c = add(u,v,a,b)

print(c)

**Output:**

[18, 24, 30, 36]

**OR**

**Code:**

def vectors(length, name):

vec = []

for i in range(length):

vec.append(int(input(f"Enter {i+1}{suffix(i+1)} value of

vector {name}: ")))

return vec

# as it does not create more logical approach

# vec=[int(input(f"Enter {i+1}{suffix(i+1)} value of {name}:

")) for i in range(length)]

# extra ;)

def suffix(i):

if i in (11,12,13):

suf = "th"

else:

suf = {1:"st",2:"nd",3:"rd"}.get(i%10,"th")

return suf

def add():

len = int(input("Enter the length of vectors: "))

u = vectors(len,"u")

print()

v = vectors(len,"v")

a = int(input("\nEnter the value of a: "))

b = int(input("Enter the value of b: "))

resultVec = []

for i in range(len):

resultVec.append(a\*u[i] + b\*v[i])

return u,v,resultVec

print("Performing ((a\*u) + (b\*v))")

u,v,result = add()

print(f"\nResultant of {u} and {v} is {result}")

**Output:**

Performing ((a\*u) + (b\*v))

Enter the length of vectors: 2

Enter 1st value of vector u: 2

Enter 2nd value of vector u: 3

Enter 1st value of vector v: 4

Enter 2nd value of vector v: 5

Enter the value of a: 2

Enter the value of b: 7

Resultant of [2, 3] and [4, 5] is [32, 41]

1. Enter a vector u as a n-list
2. Enter another vector v as a n-list
3. Find the dot product of u and v

**Code:**

def dotProduct(a,b): return sum([a[i] \* b[i] for i in range(len(a))])

a = [1,2]

b = [3,4]

print(dotProduct(a,b))

**Output:**

11

**OR**

**Code:**

def vector(length,name):

vec = []

for i in range(length):

vec.append(int(input(f"Enter {i+1}{suffix(i+1)} value of

vector {name}: ")))

return vec

def suffix(i):

if i in (11,12,13):

suf = "th"

else:

suf = {1:"st",2:"nd",3:"rd"}.get(i%10,"th")

return suf

def dotProduct():

len = int(input("Enter the length of vector: "))

a = vector(len,"a")

print()

b = vector(len,"b")

result = 0

for i in range(len):

result += a[i]\*b[i]

return a,b,result

resultant = dotProduct()

q,r,s = resultant

print(f"Dot product of {q} and {r} is {s}")

**Output:**

Enter the length of vector: 2

Enter 1st value of vector a: 1

Enter 2nd value of vector a: 2

Enter 1st value of vector b: 3

Enter 2nd value of vector b: 4

Dot product of [1, 2] and [3, 4] is 11