ATMA RAM SANATAN DHARM COLLEGE

Course Title: Discrete Mathematical Structure Practical

Submitted To:

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Course : B.Sc. Computer Science Hons.

5. Write a Program to evaluate a polynomial function. (For example store $f(n)=4n^2+2n+9$ in an array and for a given value of n, say n = 5, compute the value of f(n)).

Code:

```python
import numpy as np

# defining the function to evaluate the value of polynomial
def evalPolynomial(degree):
    coeffPolynomial = np.array([])

    # taking input for each coefficents
    for i in range(degree + 1):
        coeff = float(input(f'Enter the coefficient of x^{i}: '))
        coeffPolynomial = np.append(coeffPolynomial, coeff)

    print('\nCoefficients:', coeffPolynomial)

    x = float(input('\nEnter the value of the variable for which the value of the polynomial is to be found: '))

    # finding the value of polynomial
    value = 0
    for i in range(degree + 1):
        value += coeffPolynomial[i] * (x ** i)

    print(f'Value of polynomial with coefficients {coeffPolynomial} at {x}: ', value)

def main():
    degree = int(input('Enter the highest degree of your polynomial: '))
    print()
    evalPolynomial(degree)

if __name__ == "__main__":
    main()
```

Output: 1,2

```
Enter the value of the variable for which the value of the polynomial is to be found: 2
DSA/5.py"
Enter the highest degree of your polynomial: 5

Enter the coefficient of x^0: 5
Enter the coefficient of x^1: 2
Enter the coefficient of x^2: 3
Enter the coefficient of x^3: 4
Enter the coefficient of x^4: 1
Enter the coefficient of x^5: 2

Coefficients: [5. 2. 3. 4. 1. 2.]

Enter the value of the variable for which the value of the polynomial is to be found: 2
Value of polynomial with coefficients [5. 2. 3. 4. 1. 2.] at 2.0:  133.0
```

```
Enter the highest degree of your polynomial: 2

Enter the coefficient of x^0: 2
Enter the coefficient of x^1: 2
Enter the coefficient of x^2: 10

Coefficients: [ 2.  2. 10.]

Enter the value of the variable for which the value of the polynomial is to be found: -2
Value of polynomial with coefficients [ 2.  2. 10.] at -2.0:  38.0
```