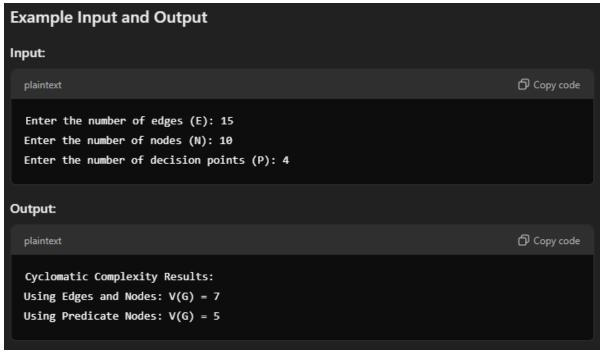
Halstead Metrics:

```
Copy code
  Enter the number of unique operators:
  = 3
  - 1
  print 1
  Enter the number of unique operands:
  X 2
  Υ 1
  Z 2
Output:
                                                                                   Copy code
  mathematica
  Number of unique operators (\eta 1): 4
  Number of unique operands (\eta^2): 3
  Total operators (N1): 7
  Total operands (N2): 5
  Program Length (N): 12
  Estimated Program Length (N): 15.0
  Volume (V): 37.95
  Level (L): 0.21428571428571427
  Effort (E): 177.03
  Programming Time (T): 9.835 seconds
```

CyclomaticComplexity



HKInformationFactor

```
Input:

mathematica

Discopy code

Number of modules: 3

Module 1: ini = 4, outi = 3, weight = 1

Module 2: ini = 5, outi = 2, weight = 1

Module 3: ini = 6, outi = 4, weight = 1

Output:

mathematica

Discopy code

Module 1: HKi = 144

Module 2: HKi = 144

Module 2: HKi = 100

Module 3: HKi = 576

Total HK Information Factor = 820
```

COCOMO

Using Data from the PDF

1. KLOC Calculation:

$$ext{Total LOC} = 500 + 250 + 200 + 600 + 300 + 150 = 2000 \quad \Rightarrow \quad ext{KLOC} = rac{2000}{1000} = 2$$

2. Effort Adjustment Factor (EAF):

$$EAF = \text{complexity} \times \text{efficiency} \times \text{reliability} \times \text{ethnicity}$$

$$EAF = 1.25 \times 0.75 \times 0.80 \times 1.50 = 1.125$$

- 3. Effort (Ei and Ef):
 - Initial Effort:

$$Ei = a \times (ext{KLOC})^b \quad ext{(For Organic: } a = 3.2, b = 1.05)$$

$$Ei = 3.2 \times (2)^{1.05} = 6.625 \, \mathrm{PM}$$

Final Effort:

$$Ef = EAF \times Ei = 1.125 \times 6.625 = 7.453125 \, \mathrm{PM}$$

4. Development Time (td):

$$td = c \times (\mathrm{Ef})^d$$
 (For Organic: $c = 2.5, d = 3.8$)

$$td = 2.5 \times (7.453125)^{3.8} = 45.35 \, \text{months (approximately)}$$

5. Staffing Size:

$$Staffing \ Size = \frac{Ef}{td} = \frac{7.453125}{45.35} = 0.164 \ persons$$

6. Total Development Cost:

$$Cost = td \times Development Cost Per Day$$

$$Cost = 45.35 \times 2000 = 90,700 INR$$

7. Function Points (FP):

$$FP = rac{ ext{Total LOC}}{128} = rac{2000}{128} = 15.625\, ext{FP}$$

8. Future Value (FVA):

$$FVA = \text{Cost} \times (1+i)^n$$

Where
$$i=0.05$$
, $n=\frac{td}{12}$:

$$FVA = 90,700 \times (1+0.05)^{3.78} = 95,482.72 \, \mathrm{INR}$$