Halstead Metrics:

```diff
Enter the number of unique operators:
4
= 3
+ 2
- 1
print 1
Enter the number of unique operands:
3
X 2
Y 1
Z 2
```

Output:

```mathematica
Halstead Metrics:
Number of unique operators (η1): 4
Number of unique operands (η2): 3
Total operators (N1): 7
Total operands (N2): 5
Program Length (N): 12
Estimated Program Length (Ñ): 15.0
Volume (V): 37.95
Level (L): 0.21428571428571427
Effort (E): 177.03
Programming Time (T): 9.835 seconds
```

CyclomaticComplexity

Example Input and Output

Input:

```plaintext
Enter the number of edges (E): 15
Enter the number of nodes (N): 10
Enter the number of decision points (P): 4
```

Output:

```plaintext
Cyclomatic Complexity Results:
Using Edges and Nodes: V(G) = 7
Using Predicate Nodes: V(G) = 5
```

HKInformationFactor

Input:

```mathematica
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
Module 1: HKi = 144
Module 2: HKi = 100
Module 3: HKi = 576
Total HK Information Factor = 820
```

COCOMO

Using Data from the PDF

1. **KLOC Calculation:**

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

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:

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

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

- Final Effort:

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

4. **Development Time (td):**

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

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

5. **Staffing Size:**

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

6. **Total Development Cost:**

$$\text{Cost} = td \times \text{Development Cost Per Day}$$

$$\text{Cost} = 45.35 \times 2000 = 90,700 \, \text{INR}$$

7. **Function Points (FP):**

$$FP = \frac{\text{Total LOC}}{128} = \frac{2000}{128} = 15.625 \, \text{FP}$$

8. **Future Value (FVA):**

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

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

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