1. Even or Odd

Problem: Given an integer x, determine if it is even or odd.

Input: A single integer x.

Output: Print `"Even"` if x is even, otherwise print `"Odd"`.

Example:

makefile Copy Edit

```
Input: 4
Output: Even
```

2. Maximum of Two Numbers

Problem: Given two integers a and b, print the larger one.

Input: Two space-separated integers.

Output: Print the larger integer.

Example:

makefile Copy Edit

```
Input: 10 20
Output: 20
```

3. Absolute Value

Problem: Given an integer x, print its absolute value (without using built-in functions).

Input: A single integer x.

Output: Print x if it's non-negative, otherwise print $-x$.

Example:

makefile Copy Edit

```
Input: -5
Output: 5
```

4. Positive, Negative, or Zero

Problem: Given an integer x, determine whether it is positive, negative, or zero.
Input: A single integer x.
Output: Print `"Positive"`, `"Negative"`, or `"Zero"`.
Example:

```makefile
Input: -3
Output: Negative
```

5. Leap Year Check

Problem: Given a year y, determine if it is a leap year.
Conditions:

- A year is a leap year if it is **divisible by 4** but **not divisible by 100**, unless it is also **divisible by 400**.
  Input: A single integer y.
  Output: Print `"Leap Year"` or `"Not a Leap Year"`.
  Example:

```yaml
Input: 2000
Output: Leap Year
```

6. Grade Based on Marks

Problem: Given a student's score x, assign a grade:

- **90-100:** `"A"`
- **80-89:** `"B"`
- **70-79:** `"C"`
- **60-69:** `"D"`
- **Below 60:** `"F"`
  Input: A single integer x ($0 \leq x \leq 100$).
  Output: Print the grade.
  Example:

makefile Copy Edit

```
Input: 85
Output: B
```

7. Minimum of Three Numbers

Problem: Given three integers a, b, and c, print the smallest.

Input: Three space-separated integers.

Output: Print the smallest integer.

Example:

makefile Copy Edit

```
Input: 3 7 2
Output: 2
```

8. Triangle Validity Check

Problem: Given three side lengths a, b, and c, determine if they can form a triangle.

Condition: A valid triangle satisfies:

$$a + b > c, \quad a + c > b, \quad b + c > a$$

Input: Three space-separated integers.

Output: Print `"Valid"` if they can form a triangle, otherwise print `"Invalid"`.

Example:

makefile Copy Edit

```
Input: 3 4 5
Output: Valid
```

9. Check if a Number is a Multiple of Another

Problem: Given two numbers a and b, check if a is a multiple of b.
Input: Two space-separated integers.
Output: Print `"Yes"` if a is a multiple of b, otherwise print `"No"`.
Example:

yaml Copy Edit

```
Input: 10 5
Output: Yes
```

10. Simple Calculator (Two Numbers, One Operator)

Problem: Given two numbers and an operator (`+`, `-`, `*`, or `/`), perform the operation and print the result.
Input: Two space-separated integers and a character representing the operator.
Output: Print the result of the operation.
Example:

makefile Copy Edit

```
Input: 10 2 *
Output: 20
```

11. Check if Three Numbers are Equal

Problem: Given three integers a, b, c, check if they are all equal.
Input: Three space-separated integers.
Output: Print `"Equal"` if all three numbers are the same, otherwise print `"Not Equal"`.
Example:

makefile Copy Edit

```
Input: 5 5 5
Output: Equal
```

12. Find the Middle Number

Problem: Given three distinct integers, find the middle one (neither the maximum nor the minimum).
Input: Three distinct integers.
Output: Print the middle number.
Example:

makefile Copy Edit

```
Input: 3 7 5
Output: 5
```

Problem: Given a point (x, y), determine which quadrant it lies in.

- **Quadrant 1:** $x > 0$ and $y > 0$
- **Quadrant 2:** $x < 0$ and $y > 0$
- **Quadrant 3:** $x < 0$ and $y < 0$
- **Quadrant 4:** $x > 0$ and $y < 0$
  Input: Two integers representing the coordinates x and y.
  Output: Print the quadrant number or `"Origin"` if $(x, y) = (0, 0)$.
  Example:

makefile Copy Edit

```
Input: -3 4
Output: Quadrant 2
```

14. Check if a Number is Between Two Given Numbers

Problem: Given three integers a, b, x, check if x is between a and b (inclusive).

Input: Three space-separated integers.

Output: Print `"Yes"` if x is between a and b, otherwise print `"No"`.

Example:

yaml Copy Edit

```
Input: 10 20 15
Output: Yes
```

15. Convert Temperature (Celsius to Fahrenheit or Vice Versa)

Problem: Given a temperature and a unit (C or F), convert it to the other unit.

Formula:

- Fahrenheit to Celsius: $C = \frac{(F-32)\times 5}{9}$
- Celsius to Fahrenheit: $F = \frac{(C\times 9)}{5} + 32$

  Input: An integer representing the temperature and a character ('C' or 'F').

  Output: Print the converted temperature.

  Example:

makefile Copy Edit

```
Input: 100 C
Output: 212 F
```

16. Traffic Light Simulation

Problem: Given a traffic light color (`R` , `Y` , or `G`), print the corresponding action:

- `"R"` → `"Stop"`
- `"Y"` → `"Get Ready"`
- `"G"` → `"Go"`
  Input: A single character ('R', 'Y', or 'G').
  Output: Print the action.
  Example:

```vbnet
Input: Y
Output: Get Ready
```

17. Check for Right-Angled Triangle

Problem: Given three sides a, b, c, check if they form a right-angled triangle.
Condition: A triangle is right-angled if the Pythagorean theorem holds:
$a^2 + b^2 = c^2$
(or any permutation of this equation).
Input: Three space-separated integers.
Output: Print `"Right-Angled"` if the condition holds, otherwise print `"Not Right-Angled"` .
Example:

```makefile
Input: 3 4 5
Output: Right-Angled
```

18. Simulate a Simple ATM Machine

Problem: Given a balance and a withdrawal amount, check if the transaction can be processed.
Conditions:

- The withdrawal amount must be **a multiple of 5**.
- The withdrawal amount must be **less than or equal to the balance**.
- There is a **0.50 transaction fee**.
  Input: Two space-separated numbers representing balance and withdrawal amount.
  Output: Print the new balance or `"Transaction Failed"`.
  Example:

```makefile
Input: 100 40
Output: 59.50
```

21. Compare Two Fractions Without Floating Points

Problem: Given two fractions $\frac{a}{b}$ and $\frac{c}{d}$, determine which one is larger.
Condition: Use **cross multiplication** to compare:
$a \times d$ vs. $b \times c$
Input: Four space-separated integers a, b, c, d (numerators and denominators).
Output: Print `"First"` if the first fraction is larger, `"Second"` if the second is larger, or `"Equal"`.
Example:

```makefile
Input: 1 2 3 4
Output: First
```