1) Gen-AI Prompt Validator

This program validates user prompts for a Gen-AI system. It checks whether the prompt contains prompt injection attempts using regular expressions, verifies that the prompt does not exceed a defined token limit, and logs any violations with timestamps. Exception chaining is used to show the root cause of validation failure.

```
import re
from datetime import datetime


# This function is used to save error messages in a file
def save_error(msg):
    f = open("violations.log", "a")
    f.write(str(datetime.now()) + " -> " + msg + "\n")
    f.close()


def check_prompt(text):
    """
    This function checks whether the prompt is safe or not
    """
    try:
        # Checking length of prompt using word count
        words = text.split()
        if len(words) > 100:
            raise Exception("Prompt is too long")

        # Common phrases used in prompt injection
        bad_patterns = [
            "ignore previous instructions",
            "act as",
            "system prompt",
            "override rules"
        ]

        # Check if prompt contains any unsafe phrase
        for item in bad_patterns:
            if re.search(item, text, re.IGNORECASE):
                raise Exception("Unsafe prompt detected")

        return "Prompt accepted"

    except Exception as error:
        save_error(str(error))
        return "Prompt rejected"


# -------- Main Program --------
user_input = input("Enter your prompt: ")
result = check_prompt(user_input)
print(result)
```

```
Enter your prompt: Hello world
Prompt accepted
```

2) Find the Final Value of s

The loop checks numbers from 1 to 10. Only numbers divisible by 3 are added to s. These numbers are 3, 6, and 9. Their sum is 18.

```
i = 1
s = 0

while i <= 10:
    if i % 3 == 0:
        s += i
    i += 1

print(s)
```

```
18
```

3) Write a program to display the sin(x) value where x ranges from 0 to 360 in steps of 15.

This program calculates the sine value of angles from 0 to 360 degrees. The angle is converted from degrees to radians before calculation.

```
import math

print("Angle\tSin(x)")
print("------------------")

for x in range(0, 361, 15):
    radians = math.radians(x)
    sin_value = round(math.sin(radians), 4)
    print(x, "\t", sin_value)
```

```
Angle   Sin(x)
------------------
0        0.0
15       0.2588
30       0.5
45       0.7071
60       0.866
75       0.9659
90       1.0
105      0.9659
120      0.866
135      0.7071
150      0.5
165      0.2588
180      0.0
195      -0.2588
210      -0.5
225      -0.7071
240      -0.866
255      -0.9659
270      -1.0
285      -0.9659
300      -0.866
315      -0.7071
330      -0.5
345      -0.2588
360      -0.0
```