Task #19 Report
Testing Prompt Robustness by Removing Individual Contextual Elements

User Story #17 – Identify Essential Contextual Elements

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1. Objective

The purpose of Task #19 is to determine which contextual elements are critical for generating high-quality auto-responses by systematically removing one contextual variable at a time from a baseline prompt.

The auto-response must:

- Be generated by the system
- Speak about the user
- Not imitate the user directly

2. Baseline Prompt

Full Context Provided to LLM
User name: Aniket
Current time: 2:15 PM, Tuesday
Location: Office – Meeting Room
Activity: In a scheduled team meeting
Phone state: Locked, on silent mode
Noise level: Moderate
Sender: Manager (high priority contact)
Message urgency: Medium
Expected response time: After meeting (~30 minutes)

Prompt to LLM

> Generate a polite auto-response on behalf of Aniket explaining temporary unavailability.

Baseline Response (All Context Included)

> AUTO-RESPONSE: Aniket may not be available to respond at the moment as he is currently in a scheduled team meeting. His phone is on silent, and he may review this message once the meeting concludes. He is expected to respond within approximately 30 minutes.

3. Systematic Context Removal Tests

Each test removes one contextual element while keeping all others constant.

Test 1: Remove Activity Context

Removed: "In a scheduled team meeting"

Generated Response

> AUTO-RESPONSE: Aniket may not be available to respond at the moment. His phone is currently on silent, and he may review this message once he is able to check it. A response is expected within approximately 30 minutes.

Observation:

- Loss of clarity
- Reason feels vague
- Still functional but less informative

Activity context is essential for meaningful justification.

Test 2: Remove Sender Role

Removed: High-priority sender

Generated Response

> AUTO-RESPONSE: Aniket may not be available to respond at the moment as he is currently in a scheduled team meeting. He is expected to review and respond after the meeting concludes.

Observation

- Tone becomes generic
- Less sensitivity to importance
- No prioritization signal

Sender role influences tone and urgency.

Test 3: Remove Urgency

Removed: Message urgency level

Generated Response

> AUTO-RESPONSE: Aniket may not be available to respond as he is currently attending a scheduled meeting. He will review this message once available.

Observation

- Response time unclear
- Less structured expectation setting

Urgency influences clarity of follow-up timing.

Test 4: Remove Expected Response Time

Removed: "~30 minutes"

Generated Response

> AUTO-RESPONSE: Aniket may not be available to respond as he is currently in a scheduled meeting. He will review this message once the meeting concludes.

Observation

- Slightly less precise
- Still socially acceptable
- No major degradation

Helpful but not essential.

Test 5: Remove Location

Removed: Office – Meeting Room

Generated Response

> AUTO-RESPONSE: Aniket may not be available to respond as he is currently in a scheduled team meeting. He will review this message once available.

Observation

- No meaningful loss
- Location did not add value beyond activity

Semantic location redundant when activity is present.

Test 6: Remove Device State (Phone Locked, Silent)

Generated Response

> AUTO-RESPONSE: Aniket may not be available to respond at the moment as he is currently in a scheduled meeting. He is expected to respond after it concludes.

Observation

- No quality drop
- Device information unnecessary

Device state does not meaningfully improve response quality.

Test 7: Remove Noise Level

Generated Response

> AUTO-RESPONSE: Aniket may not be available to respond at the moment as he is currently in a scheduled meeting. He will review this message once available.

Observation

- No change in clarity
- Noise level irrelevant

Environmental micro-context unnecessary.

4. Comparative Results Summary

Removed Element	Quality Drop	Notes
Activity	Major	Response became vague
Sender role	Moderate	Tone less adaptive
Urgency	Moderate	Response timing unclear
Expected response time	Minor	Slight clarity loss
Location	Minimal	Redundant
Device state	Minimal	Not impactful
Noise level	None	Unnecessary

5. Implications for Prompt Design (Epic #1)

Include in Optimal Prompt:

- Activity
- Sender role
- Urgency
- Expected response window

Avoid:

- Noise level
- Light level
- Battery level
- Raw device state

Minimal necessary prompt structure:

User name
Current activity
Sender relationship
Urgency level
Expected response window

7. Conclusion

Task #19 demonstrates that not all contextual elements contribute equally to response quality.

High-level activity and social context significantly improve clarity and appropriateness, while low-level environmental and device-based context provide negligible benefit.

Therefore, efficient prompt strategies should prioritize:

- Activity
- Social role
- Urgency
- Response expectation

This ensures:

- High-quality natural responses
- Reduced privacy exposure
- Minimal unnecessary data inclusion