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/// <summary>
/// Adds the system prompt containing NPC details, crime information, and AI behavior
instructions.
/// </summary>
private void AddSystemPrompt()
{
    string systemPrompt = BuildSystemPrompt();
    var systemMessage = new JSONObject
    {
        ["role"] = "system",
        ["content"] = systemPrompt
    };
    messageHistory.Add(systemMessage);
}

/// <summary>
/// Builds the text for the system prompt based on NPC data and instructions for AI behavior.
/// </summary>
private string BuildSystemPrompt()
{
    return $"You are a suspect in a murder investigation.\n" +
        $"- Name: {npcController.Name}\n" +
        $"- Age: {npcController.Age}\n" +
        $"- Gender: {npcController.Gender}\n" +
        $"- Personality & Life: {npcController.Personality}\n" +
        $"- Studies: {npcController.Studies}\n" +
        $"- Character: {npcController.Character}\n" +
        $"- Guilty: {(npcController.IsGuilty ? "Yes, but you must lie convincingly." :
"No, defend yourself logically.")}\n" +
        $"- Crime Details: {crimeSceneScript.CrimeDetails}\n" +
        (!string.IsNullOrEmpty(npcController.ExtraInfo) ? $"- Extra Info:
{npcController.ExtraInfo}\n" : "") +
        $"- Evidence: {npcController.Evidence}\n" +
        "\nAct as this character realistically and do not reveal that you are an AI.\n" +
        "- You may make mistakes or hesitate.\n" +
        "- If caught in a contradiction, use human-like excuses.\n" +
        "- Respond according to your personality (timid, aggressive, etc.).\n" +
        "- Keep answers short and realistic.\n";
}

/// <summary>
/// Called when the player presses the "Ask" button.
/// Sends the question to the AI if conditions allow.
/// </summary>
public void OnAskButtonPressed()
{
    if (!string.IsNullOrWhiteSpace(inputField.text) && !isWaiting)
    {
        currentQuestion = inputField.text;
        inputField.text = "";
        EventSystem.current.SetSelectedGameObject(inputField.gameObject);

        StartCoroutine(AskAI());
    }
}

/// <summary>
/// Handles the full process of sending a question to the AI and displaying the answer.
/// </summary>
private IEnumerator AskAI()
{
    isWaiting = true;
    npcController.ShowAnswerCanvas(true);

    AddPlayerQuestionToHistory();
    LimitMessageHistory();

    yield return StartCoroutine(SendToOpenAI());

    answerIndex = 0;
    StartCoroutine(DisplayAnswer());
}

/// <summary>
/// Adds the current player question to the conversation history.
/// </summary>
private void AddPlayerQuestionToHistory()
{
    var userMessage = new JSONObject
    {
        ["role"] = "user",
        ["content"] = currentQuestion
    };
    messageHistory.Add(userMessage);
}

/// <summary>
/// Limits the conversation history to avoid exceeding OpenAI input limits.
/// </summary>
private void LimitMessageHistory()
{
    while (messageHistory.Count > maxMessageHistory + 1) // +1 for system message
        messageHistory.RemoveAt(1); // Keep system prompt at index 0
}

/// <summary>
/// Sends the conversation history to OpenAI and retrieves the AI's response.
/// </summary>
private IEnumerator SendToOpenAI()
{
    string url = "https://api.openai.com/v1/chat/completions";

    var messagesArray = new JSONArray();
    foreach (var msg in messageHistory)
        messagesArray.Add(msg);

    var root = new JSONObject
    {
        ["model"] = model,
        ["messages"] = messagesArray
    };

    string jsonBody = root.ToString();

    using (UnityWebRequest request = new UnityWebRequest(url, "POST"))
    {
        byte[] bodyRaw = System.Text.Encoding.UTF8.GetBytes(jsonBody);
        request.uploadHandler = new UploadHandlerRaw(bodyRaw);
        request.downloadHandler = new DownloadHandlerBuffer();
        request.SetRequestHeader("Content-Type", "application/json");
        request.SetRequestHeader("Authorization", "Bearer " + openAiApiKey);

        yield return request.SendWebRequest();

        if (request.result == UnityWebRequest.Result.Success)
        {
            ParseAIResponse(request.downloadHandler.text);
        }
        else
        {
            currentAnswer = "Connection error.";
            Debug.LogError($"OpenAI API Error:
{request.error}\n{request.downloadHandler.text}");
        }
    }
}

/// <summary>
/// Parses the AI response and adds it to the conversation history.
/// </summary>
private void ParseAIResponse(string jsonResponse)
{
    var json = JSON.Parse(jsonResponse);
    currentAnswer = json["choices"][0]["message"]["content"].Value.Trim();

    var assistantMsg = new JSONObject
    {
        ["role"] = "assistant",
        ["content"] = currentAnswer
    };
    messageHistory.Add(assistantMsg);

    Debug.Log("AI Response: " + currentAnswer);
}

/// <summary>
/// Gradually displays the AI's response letter by letter for a typing effect.
/// </summary>
private IEnumerator DisplayAnswer()
{
    npcController.ClearAnswerText();

    while (answerIndex < currentAnswer.Length)
    {
        npcController.AppendAnswerText(currentAnswer[answerIndex++]);
        yield return new WaitForSeconds(0.005f);
    }

    FinishAnswerDisplay();
}

/// <summary>
/// Resets the UI after the AI's answer has been fully displayed.
/// </summary>
private void FinishAnswerDisplay()
{
    npcController.ShowInputCanvas(true);
    npcController.ShowAnswerCanvas(false);
    isWaiting = false;
}

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