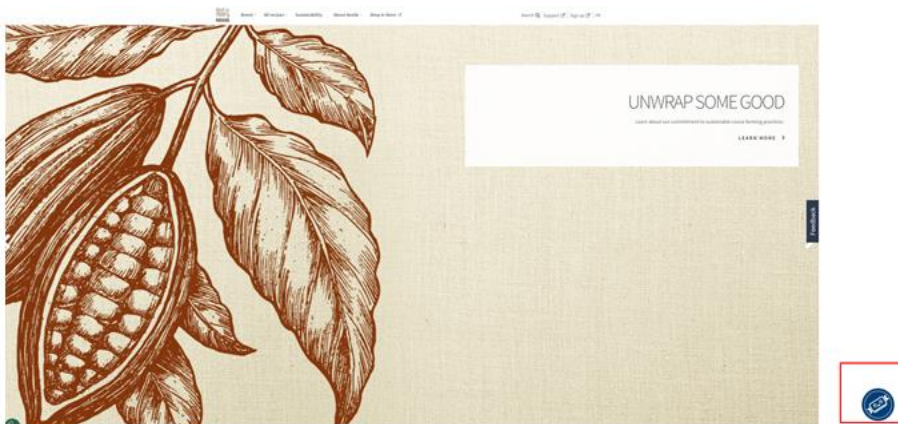## Technical Test: AI-Based Chatbot Development

Welcome to the technical assessment for developing an AI-based chatbot for the website
https://www.madewithnestle.ca/. This test is designed to evaluate your expertise in AI
development, graphic rendering, Azure-based deployment, and code versioning. Please
carefully follow the instructions provided and ensure your submission is completed by
the specified deadline.

The chatbot must be fully functional and integrated. You may use a screenshot of the
Made with Nestlé website as the background for the chatbot interface. The final
submission should include a working chatbot that can handle user queries, generate
appropriate responses, and provide reference links where necessary. (below is the
example:)

Put he chatbot as the right conner (the background is just a screen shot image)

Task Description

You are required to develop an AI-based chatbot that integrates seamlessly with the
website https://www.madewithnestle.ca/. The chatbot should provide engaging user
interactions and leverage AI capabilities to answer user queries effectively.

The user can ask the question and get the response from the real Made with Nestle Website:

SMARTIE ⌄ ✕

Hey! I'm Smartie, your personal MadeWithNestlé assistant. Ask me anything, and I'll quickly search the entire site to find the answers you need!

> What are some good gift ideas for chrismas?

For Christmas, you might consider the following gift ideas from Nestlé:

1. **KITKAT Christmas Holiday Advent Calendar**: This advent calendar is a fun way to countdown to Christmas with a variety of KITKAT treats behind each door. It's perfect for both kids and adults. Buy in Store [1]

2. **NESTLÉ Advent Calendar**: This advent calendar includes a mix of SMARTIES, AERO, and KITKAT treats, each hidden behind a numbered door. It's a delightful way to celebrate the holiday season. Buy in Store

3. **KITKAT Chunky Extreme Choc Wafer Bar**: A new addition to the KITKAT family, perfect for chocolate lovers. See all products [1]

4. **TURTLES Classic Recipe Holiday Gift Box**: A seasonal favorite, this gift box is perfect for those who love the classic TURTLES recipe. See all products [1]

5. **QUALITY STREET Holiday Gift Tin**: This tin is filled with a variety of Quality Street chocolates, making it a great gift for anyone who enjoys a mix of flavors. See all products [1]

These options offer a range of delicious treats that are sure to bring joy to your loved ones during the holiday season.

References: [1]

Ask me anything... ⇗

SMARTIE ⌄ ✕

Hey! I'm Smartie, your personal MadeWithNestlé assistant. Ask me anything, and I'll quickly search the entire site to find the answers you need!

> How many calories are in a kitkat bar

The calorie content of a KitKat bar varies depending on the specific type of KitKat bar. Here are the details for different KitKat bars:

1. **KITKAT 4-Finger Wafer Bar, Milk Chocolate (45 g)**:
   - Calories: 230 per bar [1]

2. **KITKAT Valentine's Mini Chocolate Wafer Bars Pack of 30 (per 3 bars, 36 g)**:
   - Calories: 180 per 3 bars [2]

3. **KITKAT Christmas Holiday Advent Calendar**:
   - Kit Kat Characters (per 1 piece, 8.2 g): 45 calories
   - KitKat Bubbles (per 1 piece, 7 g): 40 calories
   - KitKat Santa (per 1 piece, 29 g): 160 calories
   - KitKat mini bar (per 1 piece, 12 g): 60 calories

For more information, you can visit the following page: KitKat Products
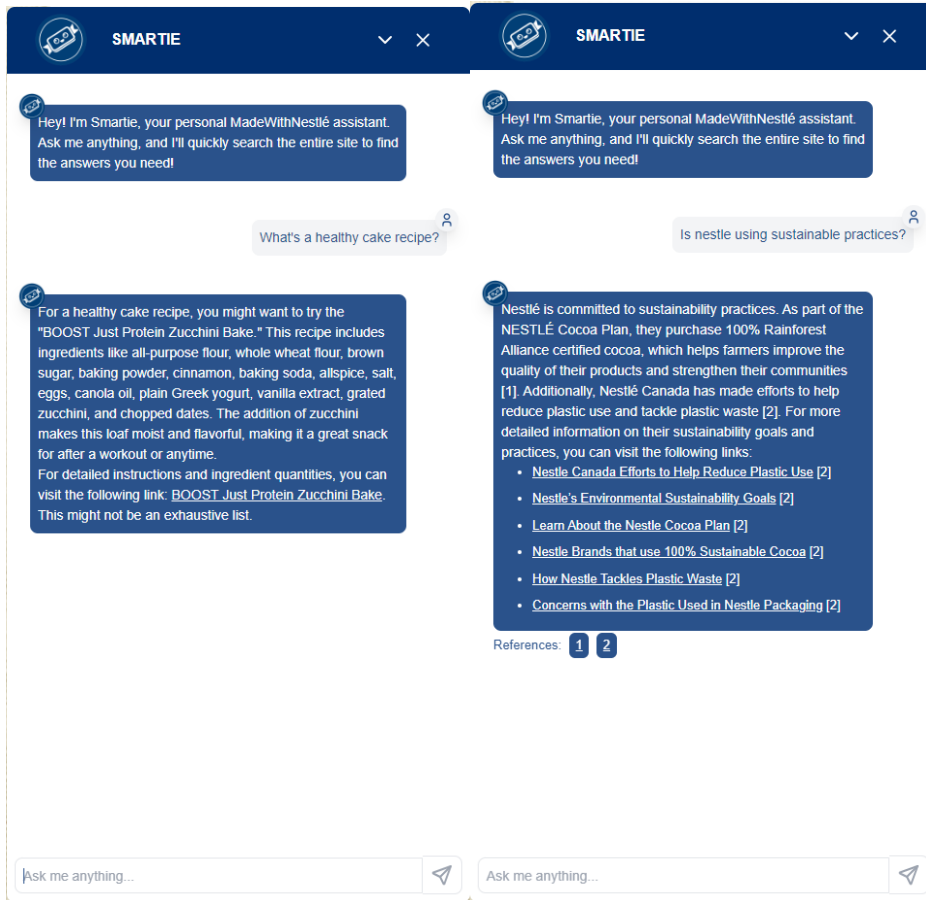
References: [1] [2]

> How many grams of protein in a kitkat 4-finger wafer bars

The KITKAT 4-Finger Wafer Bar, Milk Chocolate contains 3 grams of protein per 45 grams serving. [1]
For more details, you can visit the following page: Buy in Store. [1]

References: [1]

Ask me anything... ⇗

Technical Requirements

1. Chatbot Design:

- - The chatbot should have a customizable name and icon.
- - It should support a pop-out feature when the user clicks on it.

2. Deployment:

- - Deploy the chatbot on an Azure or Google Cloud environment and provide the deployment link for testing.
- - Ensure the deployment environment can scale to support real-time user interactions efficiently.

3. Codebase and Documentation:

- - Host the codebase on a GitHub repository with clear, step-by-step documentation for setting up, configuring, and running the project.
- - Include guidance for incorporating additional features, including the GraphRAG module.

4. Content Scraping and Storage:

- - Scrape all website content, including links, text, tables, and images, for comprehensive data collection.
- - Utilize a vector database (e.g., Azure Cognitive Search or Google Vertex AI Matching Engine) to store and retrieve the scraped content efficiently.

5. Graph-based Retrieval-Augmented Generation (GraphRAG) Module:

- - Incorporate a GraphRAG module to enhance the chatbot's ability to retrieve and generate responses based on structured relationships within the scraped content.
- - This module should leverage a graph database (e.g., Neo4j, Cosmos DB) to represent and query the connections between entities for deeper contextual understanding.

6. User Enhancement Features:

- - Allow users to customize and add new nodes and relationships to the GraphRAG module, making the chatbot adaptable to evolving knowledge and use cases.

Submission Guidelines

1. Upload your code to a GitHub repository and share the link.
2. Provide access to the Azure-deployed chatbot for testing.
3. Include a README file in your GitHub repository that outlines:
   - The steps to set up and run the chatbot locally.
   - Details about the technologies and frameworks used.
   - Any known limitations or additional features.
4. Ensure the chatbot functions smoothly and addresses user queries related to the content on the Made with Nestlé website.

Evaluation Criteria

1. Functionality: Does the chatbot effectively address user queries?
2. Visual Design: Are the graphical elements well-rendered and user-friendly?
3. Code Quality: Is the code well-structured, documented, and easy to understand?
4. Deployment: Is the chatbot accessible via the provided Azure link?
5. Creativity: Does the chatbot enhance user experience on the website?

Deadline

The completed project must be submitted by [2 weeks when you received the email from HR]. Please ensure that all components are functional and accessible for review.

Additional Reference

You can also refer to the following document for guidance on integrating Azure OpenAI solutions:

https://github.com/Azure-Samples/azure-search-openai-demo

Ensure that the solution you develop is live, functional in real-time, and provides a seamless user experience.

Additional Technical Requirement

The chatbot should also leverage web scraping technology to fetch and update content dynamically from the website https://www.madewithnestle.ca/. This will ensure the chatbot provides accurate and updated information to the users in real-time.