# **🔹 Team Roles Research & Responsibilities** This section covers detailed research for each team member's role, including their purpose in the project, required skills, tasks, and how their role contributes to the successful development of the cryptography web tool. **1. Islombek – Researcher/Documentor**

# 🧩 **Role Overview**: The Researcher/Documentor is responsible for gathering technical knowledge and maintaining comprehensive documentation throughout the project. This includes the research phase, algorithm selection rationale, use cases, team coordination logs, testing feedback, and final reflections.

# 📚 **Research Topics**:

# Importance of thorough documentation in software development.

# The difference between internal (for developers) and external (for users) documentation.

# Documentation tools: Markdown, Notion, Google Docs, etc.

# Real-world examples of where documentation saved time in development or improved project success.

# 🛠 **Key Tasks**:

# Maintain logs of team meetings and decisions.

# Document cryptographic algorithms, use cases, and how they work.

# Write final documentation with diagrams/screenshots.

# Support others by clarifying algorithm logic and site functionality in plain language.

# 🌐 **Why This Role Matters**: Without solid documentation, future developers or users cannot understand or maintain the tool. It ensures knowledge is shared clearly and the work remains usable after project delivery.

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### **2. Abbos – Algorithm Developer**

# 🧩 **Role Overview**: The Algorithm Developer designs and implements the encryption and decryption logic for the tool. This role involves selecting suitable cryptographic algorithms, writing their logic in code, and ensuring they work efficiently and securely in a web environment.

# 📚 **Research Topics**:

# **Types of Algorithms**:

# Simple: Caesar Cipher, XOR Cipher

# Intermediate: Vigenère Cipher, Playfair Cipher

# Advanced: AES (Advanced Encryption Standard), RSA

# Differences between symmetric and asymmetric encryption.

# Encryption in real-world applications: secure messaging, email, password storage, digital signatures.

# JavaScript implementation of encryption algorithms (e.g., using CryptoJS, WebCrypto API).

# 🛠 **Key Tasks**:

# Select 2 algorithms of each difficulty level.

# Write functions to encrypt/decrypt input text or files.

# Work with frontend to handle user input/output.

# Ensure compatibility across browsers and platforms.

# 🌐 **Why This Role Matters**: This is the core logic of the website. The strength, speed, and correctness of these algorithms directly impact user trust and learning effectiveness.

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### **3. Salohiddin – Project Coordinator / Tester**

# 🧩 **Role Overview**: The Coordinator/Tester's role combines task management and technical evaluation. This person ensures the team stays on schedule, distributes tasks effectively, and leads the testing phases—both internal testing and external red-team testing with other groups.

# 📚 **Research Topics**:

# Software development lifecycles and how coordination fits into Agile workflows.

# Types of software testing: unit testing, integration testing, usability testing.

# Best practices in team coordination: communication tools, regular check-ins, deadline tracking.

# Red-teaming: what it means, how external testers identify flaws.

# 🛠 **Key Tasks**:

# Schedule team meetings and track progress.

# Organize two rounds of red-team testing and collect feedback.

# Document bugs, issues, and suggestions from testers.

# Work with developers and designer to apply improvements.

# 🌐 **Why This Role Matters**: Without coordination and testing, the project can fall apart or ship with major flaws. Testing ensures functionality and user-friendliness, and coordination keeps everyone aligned and productive.

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### **4. Behruz – Frontend Developer & UI/UX Designer**

# 🧩 **Role Overview**: Behruz leads the design and frontend implementation of the web tool. This includes layout, color schemes, visualizations, interactivity, and usability. They ensure the site is not only functional but also clean, easy to use, and visually engaging.

# 📚 **Research Topics**:

# Frontend tech stack: HTML5, CSS3, JavaScript, Tailwind CSS, Bootstrap, or other UI frameworks.

# Visualization libraries: Chart.js, D3.js, or custom animations.

# UI/UX principles: accessibility, readability, intuitive navigation.

# Web design trends in educational/technical tools.

# 🛠 **Key Tasks**:

# Create responsive layout with encryption/decryption forms.

# Add drag-and-drop file upload and text input features.

# Integrate algorithm explanations and results visually.

# Polish interface with animations, color contrast, and user feedback indicators.

# 🌐 **Why This Role Matters**: The UI/UX defines the user’s experience. A confusing or poorly designed interface will make even the best algorithms feel broken. Educational tools especially benefit from clean, helpful interfaces with strong visuals and interactions. **FEEDBACK FROM OTHER TEAMS ✅ Red-Team Feedback: Team A (e.g., Group 3)**

# Testing Date: April 22, 2025 Team Members: John, Sarah, Lina Feedback Summary:

# File upload works well, but drag-and-drop doesn't always respond.

# Caesar cipher explanation is good, but RSA needs more visual aid.

# Suggest adding a "Clear Output" button.

# Dark mode is helpful but could use clearer contrasts.

# Improvements Made:

# Fixed drag-and-drop JS event handler

# Added RSA diagram with step-by-step explanation

# Implemented a clear output button

# Adjusted colors for better dark mode visibility

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# **Individual Reflection Template (For Each Member)**

### **✍️ Islombek – Researcher / Documentor**

During this project, I was responsible for leading all documentation efforts and researching both our roles and the algorithms we implemented. I gained deeper insights into how cryptographic methods are applied in real-world contexts and how proper documentation supports both development and usability. I also learned how to break down technical topics into user-friendly language, which helped our team communicate clearly. This project improved my organizational and writing skills and taught me how every team member's work connects in a real web application.

### **✍️ Abbos – Algorithm Developer**

As the algorithm developer, I worked on researching and implementing a set of encryption and decryption algorithms at different complexity levels. This helped me understand the mathematics behind encryption and how to write secure and efficient code. It was challenging to implement advanced algorithms like RSA, but testing and collaborating with the frontend made it easier. I learned a lot about how encryption protects data in everyday internet usage and how crucial code optimization is for performance.

### **✍️ Salohiddin – Project Coordinator / Tester**

I was in charge of making sure the project stayed on track and organizing our testing processes. I learned how to manage task distribution, track progress, and gather feedback through structured red-team testing. It was interesting to see how usability testing really improves the quality of a tool. I also realized the importance of clear communication and making sure everyone is aligned on the goals and deadlines.

### **✍️ Behruz – Frontend Developer / UI/UX Designer**

In this project, I handled the interface design and frontend development. I created the site layout, added interactive components, and helped users visualize how each encryption algorithm works. Designing for both usability and learning was a challenge but also very rewarding. I improved my knowledge of HTML/CSS/JS and also learned how important it is to think from the user’s perspective. This experience helped me become more confident in full-stack collaboration.

**TOOL** <https://behruz1262.github.io/encryption-decryption-tool/>