

# Final project Self-assessment report

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Team: 22120252-22120427-22120450

GitHub repo URL: <https://github.com/ducnhat24/AWD-G04>

## TEAM INFORMATION

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<b>Student ID</b>	<b>Full name</b>	<b>Git account</b>	<b>Contribution</b>	<b>Contribution percentage (100% total)</b>	<b>Expected total points</b>	<b>Final total points</b>
22120252	Giang Đức Nhật	ducnhat24	<p><b>BE:</b></p> <ul style="list-style-type: none"> <li>- Google OAuth</li> <li>2.0 integration</li> <li>- Email</li> <li>Synchronization</li> <li>- Snooze</li> <li>Mechanism</li> <li>- AI Features</li> <li>- Search Features</li> <li>- Filtering &amp; Sorting</li> <li>- Email Actions</li> </ul>	33%	10	
22120427	Nguyễn Mạnh Văn	nmvan	<p><b>FE:</b></p> <ul style="list-style-type: none"> <li>- Email Display</li> <li>- Kanban Board</li> <li>Interface</li> <li>- Snooze</li> <li>Mechanism</li> <li>- Search &amp; Sort &amp; Filter Email UI</li> <li>- Email Action</li> <li>- UI AI summary</li> <li>- Mockdata Email</li> </ul>	33%	10	

Student ID	Full name	Git account	Contribution	Contribution percentage (100% total)	Expected total points	Final total points
22120450	Bùi Đinh Gia Vỹ	VyBui13	<p><b>BE:</b></p> <ul style="list-style-type: none"> <li>- Authentication &amp; Token Management</li> </ul> <p><b>FE:</b></p> <ul style="list-style-type: none"> <li>- Concurrency handling</li> <li>- Login Page</li> <li>- Signup Page</li> <li>- Dynamic Kanban Configuration</li> </ul>	34%	10	

## FEATURE LIST

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**Project:** React Email Client with Gmail Integration & AI-Powered Kanban

Students must input minus points to every uncompleted feature in the SE column.

\*SE: Self-evaluation

\*TR: Teacher review

ID	Features	Grade			Notes
		Point	SE*	TR*	
<b>1</b>	<b>Overall requirements</b>				
User-centered design	-5	0			Built with user experience in mind. Kanban-style email management, AI summarization, semantic search for efficient email workflow
Database design	-1				Database with tables: users, emails, <b>email_vectors</b> , kanban_columns, snooze_schedules, labels
Database mock data	-1				<b>Sample emails, kanban configurations, and test data</b>
Website layout	-2	0			3-column layout: mailbox list, email list, email detail. Kanban board view
Website architect	-3	0			React SPA with backend API. Clear separation of concerns. OAuth2 flow, token handling
Website stability and compatibility	-4	0			Responsive design, tested on Chrome, Safari, Firefox, and Edge

ID	Features	Grade	Notes
	Document	-2	<b>README with setup guide, API endpoints, Google OAuth setup, token storage explanation, security considerations</b>
	Demo video	-5	<b>Video demonstrating: Gmail login, inbox sync, Kanban board, AI summarization, semantic search, drag-drop</b>
	Publish to public hosts	-1	Frontend deployed (Netlify/Vercel), Backend deployed (Render/Railway/Cloud Run)
	Development progress is recorded in Github	-7	Git history with meaningful commits, branches for features, pull requests
<b>2</b>	<b>Authentication &amp; Token Management</b>		
	Google OAuth 2.0 integration	-0.5	0 Login with Google, grant Gmail access permissions
	Authorization Code flow	-0.5	0 Backend exchanges code for tokens, stores refresh token securely
	Token storage & security	-0.5	0 Access token in-memory (frontend), refresh token server-side only
	Automatic token refresh	-0.5	0 Backend refreshes expired access tokens automatically
	Concurrency handling	-0.25	0 Single refresh request when multiple 401s occur
	Forced logout on invalid refresh	-0.25	0 Clear tokens and logout if refresh token fails
	Logout & token cleanup	-0.25	0 Clear all tokens server-side and client-side on logout
<b>3</b>	<b>Email Synchronization &amp; Display</b>		
	Fetch emails from Gmail	-0.5	0 Use Gmail API to fetch inbox emails
	Email list with pagination	-0.25	0 Paginated/virtualized email list
	Email detail view	-0.25	0 Full email content with HTML/plain text support
	Mailbox/Labels list	-0.25	0 Display Gmail labels/folders in sidebar
	Open in Gmail link	-0.25	<b>Button/icon to open email in Gmail</b>

ID	Features	Grade	Notes
<b>4</b>	<b>Kanban Board Interface</b>		
	Kanban board layout	-0.5	0 Board with columns: Inbox, To Do, Done, etc.
	Email cards display	-0.25	0 Cards showing sender, subject, snippet
	Drag-and-drop between columns	-0.5	0 Drag cards to change email status
	Status persistence	-0.25	0 Status changes saved and persisted
	Dynamic Kanban Configuration		
	> Settings interface	-0.25	0 Modal/page to create, rename, delete columns
	> Configuration persistence	-0.25	0 Custom columns saved and restored after reload
	> Gmail label mapping	-0.5	0 Columns map to Gmail labels, moving cards syncs labels
<b>5</b>	<b>Snooze Mechanism</b>		
	Select snooze time	-0.25	0 Choose snooze duration (Tomorrow, Next week, custom)
	Hide snoozed emails	-0.25	0 Email disappears from Kanban after snooze
	Auto-return on schedule	-0.5	0 Email automatically returns to board at scheduled time
<b>6</b>	<b>AI Features</b>		
	AI Summarization		
	> Backend summarization API	-0.5	0 LLM integration (Gemini API) to summarize email content
	> Summary UI on cards	-0.25	0 Display 2-3 line summary on email cards
	Text Embedding		
	> Embedding generation	-0.5	0 Generate vector embeddings for emails using embedding model
	> Vector database storage	-0.5	0 Store embeddings in MongoDB Atlas Vector Search with vector index for similarity search
<b>7</b>	<b>Search Features</b>		
	Fuzzy Search (Backend)		
	<b>chưa integrate đúng cách</b>		

ID	Features	Grade	Notes
> Typo tolerance	-0.5	0	"marketng" finds "marketing"
> Partial matches	-0.5	0	"Nguy" finds "Nguyen Van A"
> Relevance ranking	-0.25	0	Best matches ranked first
Fuzzy Search UI (Frontend)			
> Search bar integration	-0.25	0	Search bar in header/main UI
> Search results as cards	-0.25	0	Results displayed as email cards with sender, subject, snippet
> Loading/empty/error states	-0.25	0	Handle UX states properly
> Navigation back to main view	-0.25	0	Clear way to return to Kanban view
Semantic Search			
> Conceptual relevance search	-0.5	0	Query "money" finds "invoice", "price", "salary"
> Semantic search API endpoint	-0.25	0	POST /api/search/semantic endpoint
Search Auto-Suggestion			
> Type-ahead dropdown	-0.25		Dropdown appears while typing with <b>3-5 suggestions</b> Note: <b>Type-ahead suggestion khác Suggestion từ keyword / sender nha ae</b>
> Suggestions from contacts/keywords	-0.25		Suggestions populated from <b>sender names, subject keywords</b>
> Trigger search on selection	-0.25	0	Clicking suggestion triggers semantic search
<b>8 Filtering &amp; Sorting</b>			
Sort by date (newest/oldest)	-0.25		At least two sorting options ( <b>chưa có ở Email dạng list</b> )
Filter by unread	-0.25		Show only unread emails ( <b>chưa có ở Email dạng list</b> )
Filter by attachments	-0.25		Show only emails with attachments ( <b>chưa có ở Email dạng list</b> )

ID	Features	Grade	Notes
	Real-time filter updates	-0.25	Changes apply immediately without page reload <b>(chưa có ở Email dạng list)</b>
<b>9 Email Actions</b>			
	Mark as read/unread	-0.25	<b>Toggle read status via Gmail API</b>
	Compose modal	-0.25	Modal to compose new email
	Reply/Forward flow	-0.25	Reply to and forward emails
	Send via Gmail API	-0.25	Send emails through Gmail API
	View attachments	-0.25	<b>Display attachments in email detail</b>
	Download attachments	-0.25	Download attachment files
	Delete emails	-0.25	<b>Move to trash via Gmail API</b>
<b>10 Advanced features</b>			
	Gmail Push Notifications	0.25	<b>Real-time inbox updates via Gmail watch + Pub/Sub</b>
	Multi-tab logout sync	0.25	<b>BroadcastChannel for logout sync across tabs</b>
	Offline caching	0.25	<b>IndexedDB + stale-while-revalidate for emails</b>
	Keyboard navigation	0.25	<b>Navigate emails with keyboard shortcuts</b>
	Dockerize your project	0.25	<b>Docker containers for backend, frontend</b>
	CI/CD	0.25	<b>Automated testing and deployment pipeline</b>

## GIT HISTORY

### Contributors

Avatar	Username	Commits	Additions	Deletions
	ducnhat24	39	27267	2636
	nmvan	43	4721	2200
	VyBui13	15	8015	4887

### Commits

List significant commits here with format:

Date	Author	Commit Message	Files Changed
YYYY-MM-DD	<author>	<commit message>	<number>

# PROJECT SUMMARY

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## System Overview

**React Email Client with Gmail Integration** is a web-based email client that transforms Gmail into a Kanban-style productivity tool:

- Gmail OAuth2 authentication with secure token handling
- Kanban board interface for email workflow management (Inbox, To Do, Done)
- AI-powered email summarization using LLM (OpenAI/Gemini)
- Snooze mechanism to temporarily hide and auto-return emails
- Fuzzy search with typo tolerance and partial matching
- Semantic search using vector embeddings for conceptual relevance
- Dynamic Kanban configuration with Gmail label mapping
- Full email actions: compose, reply, forward, delete, attachments

## Technology Stack

- **Architecture:** React SPA + Backend API (Node.js)
- **Frontend:** React, react-window (virtualization), drag-and-drop library
- **Backend:** Node.js with Express
- **Database:** MongoDB with MongoDB Vector Search for embeddings
- **Authentication:** Google OAuth2 (Authorization Code flow)
- **AI/ML:** OpenAI API or Gemini API for summarization and embeddings
- **Email:** Gmail REST API
- **Vector Search:** pgvector or similar vector database
- **Deployment:** Frontend (Vercel), Backend(Vercel)

## API Endpoints

Endpoint	Description
<b>Auth</b>	
POST /auth/login	Đăng nhập hệ thống (trả về Access Token & User Info).
<b>Search Features</b>	
GET /mail/search	Fuzzy Search: Tìm kiếm email theo từ khóa (Subject, Sender) dùng Fuse.js.
POST /mail/search/semantic	Semantic Search: Tìm kiếm email theo ngữ nghĩa dùng Vector Search (Gemini embedding).

Endpoint	Description
GET /mail/suggestions	Auto-suggestion: Gợi ý từ khóa/người gửi khi user đang nhập liệu.
<b>Mail Operations</b>	
GET /mail/mailboxes	Lấy danh sách các hộp thư (Inbox, Sent, Drafts, Trash...).
GET /mail/mailboxes/:labelId/emails	Lấy danh sách email trong một hộp thư cụ thể (có phân trang).
GET /mail/emails/:id	Lấy chi tiết nội dung của một email.
GET /mail/emails/:id/summary	AI Summary: Lấy tóm tắt nội dung email do AI tạo ra.
POST /mail/send	Gửi email mới.
POST /mail/emails/:id/reply	Trả lời (Reply) một email.
POST /mail/emails/:id/forward	Chuyển tiếp (Forward) một email.
POST /mail/emails/:id/modify	Thay đổi trạng thái email (Đánh dấu đã đọc, Xóa, Gán nhãn...).
GET /mail/attachments/:msgId/:attId	Tải xuống file đính kèm của email.
<b>Kanban Configuration</b>	
GET /kanban/config	Lấy cấu hình bảng Kanban cá nhân của user (danh sách cột, màu sắc, label mapping).
POST /kanban/config	Khởi tạo cấu hình Kanban mới (thường gọi khi user lần đầu vào Dashboard).
PUT /kanban/config	Cập nhật toàn bộ cấu hình Kanban (ví dụ: thay đổi thứ tự các cột, đổi tên nhiều cột cùng lúc).
DELETE /kanban/config	Xóa cấu hình Kanban hiện tại (Reset về mặc định).
PATCH /kanban/config/column/:id	Cập nhật thông tin chi tiết của một cột cụ thể (đổi tên cột, đổi màu, đổi Gmail Label liên kết).
DELETE /kanban/config/column/:id	Xóa một cột cụ thể khỏi bảng Kanban.

## Key User Flows

- Authentication:** Google Sign-In → Backend token exchange → Session created → Redirect to Kanban
- Email Sync:** Login → Fetch Gmail inbox → Display as Kanban cards → Real-time updates
- Kanban Workflow:** View cards → Drag to columns → Status synced → Gmail labels updated
- AI Summary:** Email synced → LLM summarizes → Summary displayed on card
- Semantic Search:** User types query → Embedding generated → Vector search → Related emails returned
- Snooze:** Select email → Choose snooze time → Email hidden → Auto-returns at scheduled time

## Development Timeline

Week	Focus	Key Deliverables
Week 1	Basic Application	Gmail OAuth, email sync, Kanban interface with cards
Week 2	Core Workflow & AI	Drag-and-drop, snooze mechanism, AI summarization
Week 3	Fuzzy Search & Filtering	Fuzzy search (BE+FE), sorting, filtering on Kanban
Week 4	Semantic Search & Config	Vector embeddings, semantic search, dynamic Kanban config
Week 5	Deployment & Deliverables	Testing, deployment, demo video

## Security Considerations

- **Access Token:** Stored in-memory on frontend only
- **Refresh Token:** Stored server-side in secure datastore (never exposed to frontend)
- **OAuth Flow:** Authorization Code flow (not implicit) for security
- **Token Refresh:** Handled server-side with concurrency protection
- **Logout:** Clears all tokens and optionally revokes OAuth refresh token

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*Note: Fill in the student information, contribution details, self-evaluation scores, and git history before submission.*