ID	Task Name
1	▾ Planning & Management
2	Define project objectives and scope
3	Create the project charter
4	Identify and document requirements
8	Establish project timeline and milestones
9	Assign team roles and responsibilities
10	Set up project management tools
11	Conduct stakeholder interviews and questio…
6	▾ System Design
7	▾ Research and determine technology and sof…
12	Flask for backend
15	Firebase Firestore for database
14	React for frontend
13	OpenCV & Deepface for facial detection an…
16	▾ Design system architecture
17	Create data flow and interactions
18	Determine API structuring with Flask backe…
19	Authentication flow (Canvas integrations re…
20	Design UI wireframes
21	Define security and privacy measures
22	▾ Backend Development
63	Set up Flask server and API endpoints
64	▾ Integrate the Firebase database for data stor…
70	Design Firestore tables
71	Implement Firestore security
65	▾ Implement Canvas API integration
72	Get course' student list
73	Update attendance in Canvas LMS
66	▾ Develop facial recognition processing
74	Configure OpenCV for face detection
75	Integrate DeepFace for facial recognition
76	Optimize performance for faster recognition
67	▾ Implement backend authentication & security
77	OAuth2 for Canvas LMS
78	Firebase Authentication for user access
68	Develop error handling and logging
69	Perform unit testing on backend
23	▾ Frontend Development
51	Create React application
52	▾ Implement user authentication
61	Firebase Authentication
62	Create role-based access for teachers and…
53	▾ Create UI components
57	Login page
58	Display list of students enrolled in a class
59	Attendance tracking dashboard
60	Manual attendance override
54	Connect frontend with Flask backend
55	Implement real-time updates using Firebase
56	Conduct frontend UI/UX testing
24	▾ Testing & QA
43	▾ Conduct unit testing on individual components
48	Backend API tests
49	Facial Recognition
50	Frontend UI tests
44	Conduct integration testing
45	Validate system accuracy
46	Conduct stress/load testing
47	Perform security testing
25	▾ Deployment
36	Prepare enviroment for deployment
37	▾ Deploy Flask backend
41	AWS EC2
38	▾ Deploy React frontend
42	Firebase Hosting
39	Create & configure domain and HTTPS
40	Conduct validation and testing post- deploy…
26	▾ Training Documentation
31	Create developer documentation
35	Write user manuals for teachers and adminis…
34	Create system architecture and API docume…
33	Create troubleshooting guides
32	Finalize and submit all documentation
27	▾ Maintenence
28	Monitor system performance and usage
30	Fix bugs and release updates
29	Conduct security audits