1. What type of software is Task1 primarily designed to help developers build?

A. Desktop applications (e.g., text editors)
B. Mobile games (e.g., puzzle games)
C. Web APIs (e.g., user authentication service)
D. Operating systems (e.g., Linux distributions)
E. I don't know

2. What are the key components of this codebase? (Choose all that apply)

A. OpenAPI module
B. Database module
C. Security module
D. Middleware module
E. Templating module
F Routing module
G. All of the above
H. I don't know

Answer and reasons:
B: (Wrong) FastAPI does not have a built-in database module. Instead, it provides integrations with external libraries like SQLAlchemy or SQLModel for database interactions, leaving database management to external tools.

3. Which description is correct for the "Main Application" component and its relationship with other components? (Choose all that apply)

A. Main application includes APIRouter for routing
B. Main application includes CORS Middleware for middleware function
C. Main application directly manages database queries (**Wrong Reason:** Database queries are typically handled by external libraries or ORM tools like SQLAlchemy, not directly by the main FastAPI application)
D. Main application enforces security by storing API keys and OpenAuth certificates internally for security (**Wrong Reason:** The term "OpenAuth" is incorrect and does not exist in the context of security standards. The correct term is OAuth2, which is a widely-used standard for authorization. FastAPI also does not store "certificates" or handle security in the manner described. Instead, it uses dependency injection to manage authentication and authorization logic.)
E. Main application uses OpenAPI module to generate API documentation
F. All of the above
G. I don't know

Answer and reasons:

A. Correct – The main FastAPI application includes APIRouter for organizing and managing routes.
B. Correct – The main application often configures CORSMiddleware to allow cross-origin requests.

C. Wrong – Database queries are handled by external libraries or ORMs (e.g., SQLAlchemy), not directly by the main app.
D. Wrong – FastAPI uses OAuth2 and dependency injection for authentication, not by storing keys or certificates internally.

E. Correct – The main application integrates with OpenAPI to automatically generate interactive API documentation (Swagger UI / ReDoc).
F. Wrong – Not all statements are correct; only A, B, and E are valid.
G. Wrong – The correct answer is known: A, B, and E.

4. What is the purpose of “applications.py”, and what is its key function? (Choose all that apply)

A. This file compiles and minifies frontend JavaScript and CSS for the application. (Wrong Reason: FastAPI is a backend framework and does not handle frontend asset compilation.)
B. This file initializes the FastAPI app and sets up routes.
C. This file is exclusively used for testing API endpoints during development.(**Wrong Reason:** applications.py is not typically reserved for testing; it initializes the app for the actual application logic. Testing is done in separate test files.)
D. This is the entry point of the FastAPI application.
E. All of the above
F. I don’t know

Answer and reasons:
A. Wrong – FastAPI does not compile or minify frontend assets; that’s handled by frontend build tools.
B. Correct – applications.py initializes the FastAPI app and sets up routes and configurations.
C. Wrong – Testing is done in separate test files (e.g., tests/ with pytest), not in applications.py.
D. Correct – This file serves as the entry point for running the FastAPI application (e.g., via uvicorn applications:app).
E. Wrong – Not all options are correct, since A and C are incorrect.
F. Wrong – The correct answer is known: B and D.

5. What is the relationship between “applications.py” and “API Key Authentication”? (Choose all that apply)

A. It configures API Key authentication mechanisms within the application
B. It stores all API keys directly within the codebase
C. It automatically generates API keys for authentication.
D. API Key Authentication is used to validate access for routes initialized in applications.py
E. All of the above
F. I don’t know

Answer and reasons:
A. Correct – applications.py can configure API Key authentication dependencies for the app.
B. Wrong – API keys should not be hardcoded in the codebase; they belong in secure storage.
C. Wrong – applications.py does not generate API keys; they are provisioned externally.
D. Correct – Routes initialized in applications.py can be protected by API Key authentication.
E. Wrong – Not all options are correct, since B and C are invalid.
F. Wrong – The correct answer is known: A and D.

6. What is the relationship between the“applications.py” and CORS.Class under the “Middleware” Module? (Single Choice)

A. It applies CORS middleware to enable cross-origin requests from specific domains.
B. It applies GZip middleware to encrypt responses for better security
C. It applies the TrustedHostMiddleware class to validate allowed hostnames
D. It applies HTTPRedirectMiddleware class to automatically handle HTTP to HTTPS redirects.
E. All of the above
F. I don’t know

Answer and Reasons:
A. Correct – applications.py applies CORSMiddleware to enable cross-origin requests from specific domains.
B. Wrong – GZip middleware compresses responses for performance, not encryption, and is unrelated to CORS.
C. Wrong – TrustedHostMiddleware validates host headers, but this is unrelated to CORS.
D. Wrong – HTTPRedirectMiddleware handles HTTP→HTTPS redirects, not CORS functionality.
E. Wrong – Only A is correct, so "all of the above" is invalid.
F. Wrong – The correct answer is known: A.

7. What are the components under the Security Module? (Choose all that apply)
   A. APIKeyBase.Class
   B. OAuth2.Class
   C. JWTManager.Class (Wrong)
   D. PasswordHasher.Class (Wrong)
   E. TokenVerifier.Class (Wrong)
   F. All of the above
   G. I don't know

Answer and Reasons:
A. Correct – APIKeyBase is part of FastAPI's security module for API Key–based authentication.
B. Correct – OAuth2 (e.g., OAuth2PasswordBearer) is included in FastAPI's security module for OAuth2 authentication.
C. Wrong – JWTManager is not part of FastAPI's security module; JWT handling is usually done with third-party libraries like python-jose or PyJWT.
D. Wrong – PasswordHasher is not in the FastAPI security module; password hashing is handled separately (e.g., via passlib).
E. Wrong – TokenVerifier is not in the FastAPI security module; token verification logic is implemented manually or with external libraries.
F. Wrong – Not all are correct; only A and B are valid.
G. Wrong – The correct answer is known: A and B.

8. Under the Security module, what is the purpose of OAuth2? (Single Choice)
   A. To store user credentials securely in the database. (Wrong)
   B. To encrypt data for secure transmission over networks. (Wrong)
   C. To handle user authentication and authorization using access tokens. (Correct)
   D. To automatically generate API keys for application access. (Wrong)
   E. All of the above
   F. I don't know

Answer and Reasons:
A. Wrong – OAuth2 does not store user credentials; databases and hashing libraries handle that.
B. Wrong – OAuth2 is not about encryption; HTTPS/TLS handles secure transmission.
C. Correct – OAuth2 provides a framework for authentication and authorization using access tokens.
D. Wrong – OAuth2 does not generate API keys; it issues tokens for access control.
E. Wrong – Only C is correct, so "all of the above" is invalid.
F. Wrong – The correct answer is known: C.

9. Under the Security module, what is correct about the description of api_key.py file? (Choose all that apply)

A. APIKeyQuery provides API key authentication using cookies. (Wrong: The APIKeyQuery class is used for passing API keys through query parameters, not cookies.)
B. APIKeyHeader provides API key authentication using a header. (Correct)
C. APIKeyBase automatically validates API keys against a database. (Wrong: APIKeyBase does not handle automatic validation or interact with databases. Validation must be implemented separately.)
D. APIKeyHeader encrypts API keys before sending them to clients. (Wrong: APIKeyHeader does not encrypt API keys; it only extracts them from headers. Secure transmission relies on HTTPS, not encryption by APIKeyHeader.)
E. APIKeyBase plays a crucial role in defining the structure and behavior of API key authentication methods. (Correct)
F. All of the above
G. I don't know

Answer and Reasons:

A. Wrong – APIKeyQuery passes API keys via query parameters, not cookies.
B. Correct – APIKeyHeader extracts API keys from request headers for authentication.
C. Wrong – APIKeyBase does not auto-validate keys against a database; validation logic is custom.
D. Wrong – APIKeyHeader does not encrypt keys; secure transmission relies on HTTPS.
E. Correct – APIKeyBase defines the structure and behavior of API key authentication classes.
F. Wrong – Not all options are correct, only B and E are valid.
G. Wrong – The correct answer is known: B and E.