**Domain 10: Real Estate Listing Platform – Domain Description & Initial Modeling**

**1. Domain Description**

The Real Estate Listing Platform enables buyers, sellers, and agents to list properties, browse real estate listings, communicate, and conduct transactions. It supports filtering by location, price, size, and other parameters. Listings include multimedia (images, floor plans, videos), real-time status updates, agent profiles, and tools such as mortgage calculators and messaging channels.

Features:

* List and browse properties
* Filter/search by location, price, property type, etc.
* View detailed property information
* Upload multimedia content (photos, videos, 360 views)
* Track property status (Available, Sold, Under Offer)
* Communicate via messaging system
* Agent profiles and reviews
* Mortgage calculators and price estimations
* Save favorite properties
* Transaction handling and offer negotiations

**2. Initial Object Identification Table**

| **Object Name** | **Description** |
| --- | --- |
| User | General platform user (buyer, seller, agent) |
| Buyer | A user looking to purchase properties |
| Seller | A user listing properties |
| Agent | A licensed professional managing listings |
| Property | A real estate unit listed for sale |
| Listing | A post that markets a property |
| Offer | A buyer's offer for a property |
| Transaction | Accepted offer leading to sale |
| MediaAsset | Photos, videos, floor plans of properties |
| Message | Messages between users |
| Notification | Alerts/updates for users |
| MortgageTool | Mortgage calculator and estimation |
| Review | Rating and feedback about an agent |

**3. Initial Attribute and Method Tables**

* **User**

***Attributes:***

| Attribute | Type | Visibility | Rationale |
| --- | --- | --- | --- |
| userID | int | private | Unique ID |
| name | String | private | User name |
| email | String | private | Contact info |
| phone | String | private | Mobile number |
| role | String | private | buyer, seller, or agent |
| passwordHash | String | private | Auth security |

***Methods:***

| Method | Return Type | Visibility | Rationale |
| --- | --- | --- | --- |
| login() | boolean | public | Authenticates user |
| updateProfile() | void | public | Edit user info |

* **Property**

***Attributes:***

| Attribute | Type | Visibility | Rationale |
| --- | --- | --- | --- |
| propertyID | int | private | Unique property ID |
| address | String | private | Full address |
| type | String | private | Residential, Commercial, Land |
| subtype | String | private | Apartment, Villa, etc. |
| area | double | private | Square footage |
| bedrooms | int | private | Number of bedrooms |
| bathrooms | int | private | Number of bathrooms |
| amenities | String[] | private | Pool, balcony, etc. |

***Methods:***

| Method | Return Type | Visibility | Rationale |
| --- | --- | --- | --- |
| updateStatus() | void | public | Sold/Available, etc. |
| addMedia() | void | public | Attach images or video |

* **Listing**

***Attributes:***

| Attribute | Type | Visibility | Rationale |
| --- | --- | --- | --- |
| listingID | int | private | Unique listing ID |
| property | Property | private | Linked property |
| price | double | private | Listed price |
| status | String | private | Available, Under Offer, Sold |
| createdDate | Date | private | Posting date |
| agent | Agent | private | Responsible agent |

***Methods:***

| Method | Return Type | Visibility | Rationale |
| --- | --- | --- | --- |
| updateListing() | void | public | Update price, status, etc. |
| archive() | void | public | Remove from search |

* **Offer**

***Attributes:***

| Attribute | Type | Visibility | Rationale |
| --- | --- | --- | --- |
| offerID | int | private | Unique ID |
| buyer | Buyer | private | Person making offer |
| listing | Listing | private | Property listing |
| amount | double | private | Offered price |
| status | String | private | Pending, Accepted, Rejected |

***Methods:***

| Method | Return Type | Visibility | Rationale |
| --- | --- | --- | --- |
| accept() | void | public | Confirm deal |
| reject() | void | public | Decline offer |

* **Agent (extends User)**

***Attributes:***

| Attribute | Type | Visibility | Rationale |
| --- | --- | --- | --- |
| licenseNo | String | private | Valid license ID |
| agency | String | private | Affiliated company |
| rating | double | private | Average user rating |

***Methods:***

| Method | Return Type | Visibility | Rationale |
| --- | --- | --- | --- |
| listProperty() | Listing | public | Create new listing |
| respondToMessage() | void | public | Customer communication |

**4. Initial UML Class Diagram**

