

| Use Case  | name                       | Type     | Count |
|---|----------------------------|----------|-------|
| 1. checks account balance                                     | Card Number                | String   | 1     |
|   | Password                   | string   | 1     |
| 2. withdraws money  | Card Number                | string   | 1     |
|   | Password                   | string   | 1     |
| 3. User logs into email account                               | Password                   | string   | 1     |
|   | email address              | string   | 1     |
|   | Authentication code        | string   | 1     |
|   | option                     | char     | 1     |
| 4. User uploads a photo to a social media profile             | image                      | int      | 1     |
|   | select option              | char     | 1     |
| 5. User plays a music file using a music player               | file music name            | string   | 1     |
|   | stop option                | char     | 1     |
|   | player option              | char     | 1     |
| 6. User sets a reminder on a smartphone                       | date and time              | DateTime | 1     |
| 7. User books a movie ticket online                           | movie ticket code          | string   | 1     |
|   | number of books movie tick | int      | 1     |
|   | price                      | string   | 1     |
|   | confirm option             | char     | 1     |
| 8. User searches for a recipe on a cooking app                | recipe name                | string   | 1     |
| 9. User uploads multiple images to generate a slideshow video | images                     | int      | >1    |
|   | DurationEachImage          | double   | 1     |
|   | width                      | double   | 1     |
|   | hight                      | double   | 1     |
|   | option (for select image b | char     | 1     |
|   | option (for next button)   | char     | 1     |
| 10. User places an online food delivery order                 | order name                 | string   | 1     |
|   | number of order            | int      | 1     |
|   | confirm option             | char     | 1     |
|   | price                      | double   | 1     |
|   | option (for next button)   | char     | 1     |
|   | appointment date           | DateTime | 1     |

|   |                           |          |   |
|---|---------------------------|----------|---|
| 11. User schedules an appointment with a doctor through a health portal | patient's name            | string   | 1 |
|   | patient's phone number    | string   | 1 |
|   | doctor name               | string   | 1 |
|   | medical condition         | string   | 1 |
| 12. User creates an event and invites friends on a calendar app         | event title               | string   | 1 |
|   | event date                | DateTime | 1 |
| 13. User applies for a loan via online banking                          | loan type                 | string   | 1 |
|   | customer full name        | string   | 1 |
|   | Nationality               | string   | 1 |
|   | National ID               | string   | 1 |
| 14. User registers and enrolls in a university course                   | course code               | string   | 1 |
|   | student name              | string   | 1 |
|   | student ID                | string   | 1 |
|   | course price              | string   | 1 |
| 15. User customizes and purchases a T-shirt from an online store        | size                      | double   | 1 |
|   | color                     | string   | 1 |
|   | design                    | string   | 1 |
|   | quantity                  | int      | 1 |
|   | User Name                 | string   | 1 |
| 16. User installs software using a package manager                      | package command           | string   | 1 |
| 17. User reports a bug on a project management platform                 | bug title                 | string   | 1 |
|   | Priority                  | string   | 1 |
|   | bug type                  | string   | 1 |
|   |                           |          |   |
| 18. User uploads a resume and receives job recommendations              | resume file               | string   | 1 |
| 19. User submits tax forms online and gets real-time calculations       | form                      | string   | 1 |
|   | tax value                 |          |   |
| 20. User uses a smart thermostat to schedule home temperature           | temperature sensor reader | double   | 1 |
| 21. User trains a custom AI model on uploaded data                      | data                      | string   | 1 |

|   |              |        |   |
|---|--------------|--------|---|
| 21. User trains a custom AI model on uploaded data                              | data         | string | 1 |
| 22. User tracks fitness data and gets personalized workout suggestions          | fitness type | string | 1 |
|   | country      | string | 1 |
|   | Age          | int    | 1 |
|   | job type     | string | 1 |
| 23. User reserves a hotel room, flights, and car rental in one session          | hotel name   | string | 1 |
|   | to city      | string | 1 |
|   | car type     | string | 1 |
| 24. User uses a banking app to transfer funds with currency conversion          | amount       | string | 1 |
|   | from country | string | 1 |
| 25. User completes a full patient intake process online before a hospital visit | patient name | string | 1 |
|   | visit id     | string | 1 |
|   | sick state   | string | 1 |
|   | city         | string | 1 |

























































| Input                      |  |  |
|----------------------------|--|--|
| Operation Method           | Validation                               | Conversion                               |
| Easy Level (1–8): Basic, s |  |  |
| single value               | 16 char, not null, numbers only          | No                                       |
| single value               | match as password exist                  | No                                       |
| single value               | 16 char, not null, numbers only          | No                                       |
| single value               | match as password exist                  | No                                       |
| single value               | match as password exist                  | NO                                       |
| single value               | already sign up                          | No                                       |
| single value               | code in same email address               | No                                       |
| single value               | within choices                           | NO                                       |
| Multiple values            | within specific frame                    | No                                       |
| single value               | within choices                           | NO                                       |
| single value               | .mp3 extention                           | No                                       |
| single value               | wthin choices                            | No                                       |
| single value               | wthin choices                            | No                                       |
| single value               | date and time correct formate , not null | No                                       |
| single value               | code exist                               | no                                       |
| single value               | not null, int format                     | no                                       |
| single value               | not null                                 | res (conver from string to int or double |
| single value               | within choices                           | no                                       |
| single value               | not null                                 | no                                       |
| Medium Level (9–17):       |  |  |
| Multiple values            | within specific frame                    | No                                       |
| single value               | not null , just number                   | No                                       |
| single value               | not null , just number                   | No                                       |
| single value               | not null, just number                    | No                                       |
| single value               | within choices                           | No                                       |
| single value               | within choices                           | No                                       |
| single value               | not null                                 | No                                       |
| single value               | just number                              | No                                       |
| single value               | within choices                           | No                                       |
| single value               | not null                                 | No                                       |
| single value               | within choice                            | No                                       |
| single value               | not null, date formate                   | No                                       |

|   |                                 |     |
|---|---------------------------------|-----|
| single value                                    | not null                        | No  |
| single value                                    | not null, 8 digit               | No  |
| single value                                    | not null                        | No  |
| single value                                    | not null                        | No  |
| single value                                    | not null                        | No  |
| single value                                    | not null, date formate accepted | No  |
| single value                                    | Not null                        | NO  |
| single value                                    | Not null                        | NO  |
| single value                                    | Not null, only number           | NO  |
| single value                                    | Not null, only number           | NO  |
| single value                                    | not null                        | No  |
| single value                                    | not null                        | No  |
| single value                                    | not null , 8 digit              | No  |
| single value                                    | not null                        | No  |
| multiple values                                 | not null                        | No  |
| multiple values                                 | not null                        | No  |
| multiple values                                 | not null                        | No  |
| multiple values                                 | not null, >0                    | No  |
| single value                                    | not null                        | No  |
| multi values                                    | Not null, valid command syntax  | No  |
| single value                                    | not null                        | No  |
| single value                                    | not null, within option         | no  |
| single value                                    | not null                        | No  |
| Advanced Level (18–25): Involve data processing |                                 |     |
| single value                                    | not null , pdf except extention | No  |
| Multiple values                                 | Not null                        | yes |
| single value                                    | not null, validFormat           | No  |
| Multiple values                                 | not null                        | yes |

| multiple values | not null                   | yes |
|-----------------|----------------------------|-----|
| single value    | not null, within selection | No  |
| single value    | not null, within selection | No  |
| single value    | not null, just int value   | No  |
| single value    | not null                   | No  |
| single value    | not null within choice     | No  |
| single value    | not null                   |     |
| single value    | not null                   |     |
| single value    | Not null                   | yes |
| single value    | Not null, within choice    | No  |
| single value    | Not null                   | No  |
| single value    | Not null, 4 digit          | No  |
| single value    | Not null                   | No  |
| single value    | Not null, within choices   | No  |



























































| Output                    |           |             | Process                 |                              |
|---------------------------|-----------|-------------|-------------------------|------------------------------|
| Name                      | Type      | Count       | Single / multiple tasks | Name                         |
| straightforward use cases |           |             |                         |                              |
| amount                    | double    | 1           | multiple                | checkCardValidity            |
|                           |           |             |                         | CheckBalance                 |
| withdraws money amount    | double    | 1           | multiple                | checkCardValidity            |
| Remaining Balance amount  | double    | 1           |                         | CheckBalance                 |
| log to email account      | ValidFlag | 1           | Multiple                | password check               |
|                           |           |             |                         | login                        |
|                           |           |             |                         | check email account          |
|                           |           |             |                         | log to email account         |
| Add image to profile      | int       | Multi value | single                  | select photo                 |
|                           |           |             |                         | Add photo to profile         |
| player music              | int       | Multi value | Multiple                | select file name             |
|                           |           |             |                         | play music                   |
|                           |           |             |                         | stop music                   |
| successfully reminder     | bool      | 1           | single                  | set reminder                 |
| Total Price               | double    | 1           | Multiple                | check number of movie ticket |
|                           |           |             |                         | books a movie tiket          |
|                           |           |             |                         | calculate total price        |
|                           |           |             |                         | confirm books                |
| recipt                    | string    | 1           | single                  | search recipe                |
| Multi-step interactions   |           |             |                         |                              |
| video                     | int       | Multi value | multiple                | select images                |
|                           |           |             |                         | Prepare image                |
|                           |           |             |                         | slidesShow Video             |
| withdraws money amount    | double    | 1           | Multiple                | search order                 |
|                           |           |             |                         | add order to list            |
| Remaining Balance amount  | double    | 1           |                         | confirm order                |
|                           |           |             |                         | OrderList                    |
|                           |           |             |                         | withdraws payment            |
|                           |           |             |                         | check doctor name exist      |

|   |        |   |          |                          |
|---|--------|---|----------|--------------------------|
| appointment detail                            | string | 1 | Multible | create appointment code  |
|   |        |   |          | confirm appoinment       |
|   |        |   |          | appoinment cost          |
|   |        |   |          | appoinment detail        |
| create event                                  | string | 1 | multiple | create event             |
| send event email to invites                   | bool   | 1 |          | show event detail        |
| loan detail                                   | string | 1 | multiple | apply loan               |
|   |        |   |          | customer information     |
|   |        |   |          | employer address details |
|   |        |   |          | Loan detail              |
| successfully register                         | bool   | 1 | multiple | check course code exist  |
|   |        |   |          | register on course       |
|   |        |   |          | total course price       |
|   |        |   |          | confirm registration     |
| cart order detail                             | string | 1 | Multiple | Select T-shirt           |
|   |        |   |          | Add T-shirt to cart      |
|   |        |   |          | CheckOut                 |
|   |        |   |          | confirmation order       |
|   |        |   |          | send notification        |
| Downloaded package                            | string | 1 | Multiple | check package available  |
| installation progress                         | int    | 1 |          | download package         |
| Bug report submission status                  | string | 1 | Multible | submit_bug_report        |
| Bug ID  | string | 1 |          | generate_bug_id          |
| Notification sent                             | string | 1 |          | notify_team              |
| ssing, conditional logic, or multiple systems |        |   |          |                          |
| list of jobs                                  | string | 1 | Multiple | submit_resume            |
|   |        |   |          | resume analysis          |
|   |        |   |          | job recomandation        |
| update form                                   | string | 1 | Multiple | readform                 |
|   |        |   |          | tax calculation          |
|   |        |   |          | writeform                |
| current temp                                  | double | 1 | Multiple | thermostat Communication |
| current state                                 | string | 1 |          | thermostat Handling      |
| next change                                   | double | 1 |          | Status Feedback to User  |
| AI model                                      | string | 1 | Multible | Preprocessing data       |

|                                 |        |   |          |                                  |
|---------------------------------|--------|---|----------|----------------------------------|
| AI model                        | string | 1 | Multiple | training_AI                      |
| customer type                   | string | 1 | Multiple | TrackInformation                 |
| personalized workout suggestion | string | 1 |          | personalized workout suggestions |
| reseves form                    | string | 1 | Multiple | availabe rooms                   |
|                                 |        |   |          | reserves room                    |
|                                 |        |   |          | available flight                 |
| conversion amount               | double | 1 | Multiple | difference amount                |
|                                 |        |   |          | conversion amount                |
| patient visit information       | file   | 1 | Multiple | create patient visit id          |
|                                 |        |   |          | checkavailablepatients visit     |
|                                 |        |   |          | patient visit information        |
| send notification in email      | string | 1 |          | notification send                |

























































| Task ( function )                                |                           |            |
|--|---------------------------|------------|
| Input  | Output Name               | Outputtype |
|  |                           |            |
| Card Number and password                         | ValidFlag                 | bool       |
| Card Number                                      | amount                    | double     |
| Card Number and password                         | ValidFlag                 | bool       |
| Card Number                                      | amount                    | double     |
| password   | ValidFlag                 | bool       |
| password + email                                 | email account             | string     |
| Authentication code                              | ValidFlag                 | bool       |
| email adress+ password+ Authentication code      | ValidFlag                 | bool       |
| select option                                    | ValidFlag                 | bool       |
| image  | profile with photo        | int        |
| select option                                    | musics list               | string     |
| file music name + play option                    | pay music                 | int        |
| file music name + stop option                    | validFlag                 | bool       |
| date and time + place name                       | successfully reminder     | bool       |
| movie ticket code + number of books movie ticket | validFlag                 | bool       |
| number of books movie ticket                     | validFlag                 | bool       |
| number of books movie ticket + price             | total price               | double     |
| confirm option                                   | ValidFlag                 | bool       |
| recipe name                                      | detail recipe             | string     |
|  |                           |            |
| select option                                    | one character             | char       |
| image, width, hight                              | image                     | int        |
| images + DurationEachImage                       | video                     | int        |
| order name                                       | order detail              | string     |
| order name+ number of order                      | order list                | string     |
| confirm option                                   | validFlag                 | bool       |
| order name+ price + number of order              | detail order              | string     |
| price + number of order                          | money amount              | double     |
| doctor name                                      | detail doctor information | string     |

|   |  |                 |
|---|--|-----------------|
| medical condition + doctor name + date                        | appointment code                             | string          |
| appointment code  | ValidFlag                                    | bool            |
| appointment code + price                                      | appointment total cost                       | double          |
| appointment code + appointment total cose                     | appointment detail informatio                | string          |
| event title + event date + event location + event description | event code                                   | string          |
| event code  | event detail                                 | string          |
| loan type   | ValidFlag                                    | bool            |
| Father's name + Age + residency types + No. of dependen       | detail customer information                  | string          |
| employer name employer ID                                     | employer information                         | string          |
| National ID + loan type                                       | detail loan data                             | string          |
| course code   | CheckFlag                                    | bool            |
| student name + student ID                                     | conformflag                                  | bool            |
| months + price  | total course price                           | double          |
| total course price + course code                              | successfull registration                     | bool            |
| size + color + design+ quantity                               | detail T-shirt                               | string          |
| detail T-shirt  | Add flag                                     | bool            |
| user-Name + user Email + Bank card number                     | cart detail                                  | string          |
| user-Name + User Email +cart detail                           | ConfirmFlag                                  | bool            |
| UserEmail + cart detail                                       | SendFlag                                     | bool            |
| package command   | validFlage                                   | bool            |
| package command   | package                                      | string          |
| bug type+ bug_description + bug title                         | submision successfully                       | bool            |
| submession succesfully flag                                   | bug id                                       | string          |
| bug id  | notefication send                            | string          |
|   |  |                 |
| resume file   | submission successfully                      | bool            |
| resume file   | key words                                    | string          |
| key_words   | job list                                     | string          |
| form  | price  | double          |
| price* tax value  | total price                                  | double          |
| total price + form  | update form                                  | string          |
| current temp + status   | Current state from thermostat                | double          |
| current temp + status   | temp change, update status                   | double          |
| Current state from thermostat                                 | Display of current temp, next change, status | double , string |
| data  | cleaning data                                | string          |

|   |                            |        |
|---|----------------------------|--------|
| cleaning data   | AI model                   | string |
| fitness type, country, age, job type                          | customer type              | string |
| customer type   | fitnesslist                | string |
| hotel name , to city  | room id                    | string |
| room id , to city   | reverse flag               | bool   |
| to city   | flight id                  | string |
| from country, to country                                      | difference amount          | double |
| amount , difference amount                                    | final amount               | double |
| e + visit id + sick state + city + phone number + patient vis | patient visit id           | string |
| date/time   | patient visit list         | string |
| patient visit id  | patient visit information  | string |
| patient visit information + email                             | send notification in email | sting  |























































