|  |  |
| --- | --- |
| R01 | User (id, e-mail NN UK, full\_name, password NN, URL NN UK, username NN UK, administrator NN) |
| R02 | Project (id, description, end\_date **CK** end\_date > start\_date, name **NN**, privacy, start\_date **NN**, state **NN**, id\_coordinator → User) |
| R03 | Board (id, description, name **NN**, id\_creator → User, id\_project → Project) |
| R04 | Task (id, budget, deadline **NN**, description, name **NN**, progress **CK** 0 ≤ progress ≤ 100, state **NN CK** state **IN** stateType, id\_creator → User, id\_board → Board) |
| R05 | Meeting (id, date **NN CK** date > today, name, place, id\_board → Board) |
| R06 | Personal\_event (id, date **NN CK** date > today, name, place, id\_user → User) |
| R07 | Comment (id, comment **NN**, date **NN**, id\_user → User, id\_task → Task) |
| R08 | File (id, description, path **NN**, publish\_date **NN**, id\_user → User, id\_task → Task) |
| R09 | Notification (id, date **NN**, notification **NN**, state **NN**, id\_user → User) |
| R10 | Progress\_update (id, date **NN**, new\_value **CK** 0 ≤ new\_value ≤ 100, id\_user → User, id\_task → Task) |
| R11 | Message (id, date **NN**, message **NN**, id\_user → User, id\_project → Project) |
| R12 | Project\_team (id\_project→ Project, id\_worker → User) |
| R13 | Board\_team (id\_board→ Board, id\_worker → User) |
| R14 | Profile\_picture (id\_image, id\_user → User, path **UK**) |
| R15 | Project\_picture (id\_image, id\_project → Project, path **UK**) |
| R16 | Contact (id\_user → User, id\_contact → User) |
| R17 | Ban\_user (id\_administrator → User, id\_user → User, date) |
| R18 | Archive\_project (id\_project → Project, id\_administrator → User, date) |

**A5 – Relational schema, validation and schema refinement**

1. **Relational Schema**
2. **Domains**

|  |  |
| --- | --- |
| today | DATE DEFAULT CURRENT\_DATE |
| stateType | ENUM (‘Closed’, ‘In\_progress’, ‘Archived’) |

1. **Functional dependencies and schema validation**

|  |  |
| --- | --- |
| **Table R01** (User) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0101 | {id} → {e-mail, full\_name, password, URL, username, administrator} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R02** (Project) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0201 | {id} → {description, end\_date, name, privacy, start\_date, state, id\_coordinator} |
| **NORMAL FORM** | BCNF |
| **Table R03** (Board) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0301 | {id} → {description, name, id\_creator, id\_project} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R04** (Task) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0401 | {id} → {budget, deadline, description, name, progress, state, id\_creator, id\_board} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R05** (Meeting) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0501 | {id} → {date, name, place, id\_board} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R06** (Personal\_event) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0601 | {id} → {date, name, place, id\_user} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R07** (Comment) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0701 | {id} → {comment, date, id\_user, id\_task} |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R08** (File) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD0801 | {id} → {description, path, publish\_date, id\_user, id\_task} |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R09** (Notification) | |
| **Keys:** {id, id\_user} | |
| **Functional Dependencies** | |
| FD0901 | {id, id\_user} → {date, notification, state} |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R10** (Progress\_update) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD1001 | {id} → {date, new\_value, id\_user, id\_task} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R11** (Message) | |
| **Keys:** {id} | |
| **Functional Dependencies** | |
| FD1101 | {id} → {date, message, id\_user, id\_project} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R12** (Project\_team) | |
| **Keys:** {id\_project, id\_worker} | |
| **Functional Dependencies** | |
| (none) | |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R13** (Board\_team) | |
| **Keys:** {id\_board, id\_worker} | |
| **Functional Dependencies** | |
| (none) | |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R14** (Profile\_picture) | |
| **Keys:** {id\_image} | |
| **Functional Dependencies** | |
| FD1401 | id\_image → {id\_user, path} |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R15** (Project\_picture) | |
| **Keys:** {id\_image} | |
| **Functional Dependencies** | |
| FD1501 | id\_image → {id\_project, path} |
| **NORMAL FORM** | BCNF |

|  |  |
| --- | --- |
| **Table R16** (Contact) | |
| **Keys:** {id\_user, id\_contact} | |
| **Functional Dependencies** | |
| (none) | |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R17** (Ban\_user) | |
| **Keys:** {id\_user} | |
| **Functional Dependencies** | |
| FD1701 | id\_user → {id\_administrator} |
| **NORMAL FORM** | BCNF |

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| --- | --- |
| **Table R18** (Archive\_project) | |
| **Keys:** {id\_project} | |
| **Functional Dependencies** | |
| FD1801 | id\_project → {id\_administrator} |
| **NORMAL FORM** | BCNF |

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