|  |  |  |
| --- | --- | --- |
| Process ID | Process Name | Description |
| 1 | **Validate User Login** | Students and Admins sign in (authentication process). |
| 2 | **Register Student Account** | Students sign up by creating a new account (new Users record). |
| 3 | **View Hall Locations** | Students search for halls/buildings, view stair instructions and videos. |
| 4 | **View Department Books** | Students browse books by department and academic year, and download materials. |
| 5 | **View Academic Staff Info** | Students search for academic staff members and find office locations. |
| 6 | **Manage Book Exchange** | Students give, take, or give-for-take books (offer, request, notify, chat). |
| 7 | **Manage Academic Resources** | Admin manages academic staff, department books, and department courses. |
| 8 | **Manage Users** | Admin promotes, blocks, and deletes users. Also views user list. |
| 9 | **Monitor System Activity** | Admin views Book Exchange statistics (KPIs, Charts) from dashboard. |

**External Entities (to appear in Context Diagram and Zero-Level Diagram):**

|  |  |
| --- | --- |
| External Entity | Description |
| Student | Regular user using the system features (Sign Up, Sign In, Halls, Departments, Academic Staff, Book Exchange). |
| Admin | Special role managing Users, Departments, Staff, and monitoring system activities. |

Data Stores (used by Processes):

|  |  |
| --- | --- |
| Data Store ID | Data Store Name |
| D1 | Users |
| D2 | Departments |
| D3 | Academic Staff |
| D4 | Courses |
| D5 | Books |
| D6 | Book Exchange |
| D7 | Book Offers |
| D8 | Book Requests |
| D9 | Notifications |
| D10 | Chat Messages |
| D11 | Halls |

Major Data Flows

|  |  |  |  |
| --- | --- | --- | --- |
| Flow ID | Flow Name | From | To |
| F1 | Login Credentials | Student/Admin | Validate User Login |
| F2 | Registration Info | Student | Register Student Account |
| F3 | Validated User Info | Validate User Login | Student/Admin |
| F4 | Hall Search Request | Student | View Hall Locations |
| F5 | Halls Information | Halls (D11) | View Hall Locations |
| F6 | Department Books Request | Student | View Department Books |
| F7 | Books and Materials | Books (D5) | View Department Books |
| F8 | Academic Staff Search Request | Student | View Academic Staff Info |
| F9 | Academic Staff Data | Academic Staff (D3) | View Academic Staff Info |
| F10 | Book Offer Submission | Student | Manage Book Exchange |
| F11 | Book Request Submission | Student | Manage Book Exchange |
| F12 | Notification Message | Manage Book Exchange | Notifications (D9) |
| F13 | Chat Messages | Manage Book Exchange | Chat Messages (D10) |
| F14 | User Management Request | Admin | Manage Users |
| F15 | Users Information | Users (D1) | Manage Users |
| F16 | Department Management Request | Admin | Manage Academic Resources |
| F17 | Staff/Books/Courses Data | Departments (D2), Academic Staff (D3), Courses (D4), Books (D5) | Manage Academic Resources |
| F18 | System KPIs Request | Admin | Monitor System Activity |
| F19 | KPI Data | Book Exchange (D6, D7, D8) | Monitor System Activity |