ПРИЛОЖЕНИЕ 1

**Разъяснение к этапам:**

1. Для этапа 1, необходимо произвести реализацию трёх хранимых процедур (на добавление, изменение и удаление данных), для каждой таблицы базы данных, с демонстрацией скриншота реализованной таблицы, скрипта созданных процедур и скриншот реализации процедур из обозревателя объектов;
2. Для этапа 2, необходимо реализовать таблицу, в которой нужно будет выписать в качестве столбцов, все реализованные таблицы, функции, вызова для каждой хранимой процедуры, столбцы с названием ролей. На пересечении каждой функции и роли, должны быть выставлены Х, что означает, что у данного пользователя, будет доступ к указанной функции вызова.
3. Для этапа 3, необходимо сопоставить физические названия, ролей, объектов, функций, для создания скрипта разграничения прав доступа.

**Этапы выполнения работы:**

1. Реализация хранимых процедур;

Таблица 1 – Хранимые процедуры

| Таблица | Скрипт реализации | Результат |
| --- | --- | --- |
|  | Добавление |  |
| -- Таблица Класс (Class)  -- Добавление  CREATE OR REPLACE PROCEDURE Class\_Insert (  p\_Name\_Class VARCHAR(12),  p\_Image\_Class VARCHAR(100)  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Class (Name\_Class, Image\_Class)  VALUES (p\_Name\_Class, p\_Image\_Class);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Class\_Update (  p\_ID\_Class INT,  p\_Name\_Class VARCHAR(12),  p\_Image\_Class VARCHAR(100)  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Class  SET Name\_Class = p\_Name\_Class,  Image\_Class = p\_Image\_Class  WHERE ID\_Class = p\_ID\_Class;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Class\_Delete (  p\_ID\_Class INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Class  WHERE ID\_Class = p\_ID\_Class;  END;  $$; |
|  | Добавление |  |
| -- Таблица Статус номера (Status\_room)  -- Добавление  CREATE OR REPLACE PROCEDURE Status\_room\_Insert (  p\_Name\_Status\_room VARCHAR(12)  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Status\_room (Name\_Status\_room)  VALUES (p\_Name\_Status\_room);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Status\_room\_Update (  p\_ID\_Status\_room INT,  p\_Name\_Status\_room VARCHAR(12)  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Status\_room  SET Name\_Status\_room = p\_Name\_Status\_room  WHERE ID\_Status\_room = p\_ID\_Status\_room;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Status\_room\_Delete (  p\_ID\_Status\_room INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Status\_room  WHERE ID\_Status\_room = p\_ID\_Status\_room;  END;  $$; |
|  | Добавление |  |
| -- Таблица Номер (Room)  -- Добавление  CREATE OR REPLACE PROCEDURE Room\_Insert (  p\_Room\_Number\_Room VARCHAR(3),  p\_Class\_ID INT,  p\_Daily\_Cost\_Room INT,  p\_Status\_Room\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Room (Room\_Number\_Room, Class\_ID, Daily\_Cost\_Room, Status\_Room\_ID)  VALUES (p\_Room\_Number\_Room, p\_Class\_ID, p\_Daily\_Cost\_Room, p\_Status\_Room\_ID);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Room\_Update (  p\_ID\_Room INT,  p\_Room\_Number\_Room VARCHAR(3),  p\_Class\_ID INT,  p\_Daily\_Cost\_Room INT,  p\_Status\_Room\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Room  SET Room\_Number\_Room = p\_Room\_Number\_Room,  Class\_ID = p\_Class\_ID,  Daily\_Cost\_Room = p\_Daily\_Cost\_Room,  Status\_Room\_ID = p\_Status\_Room\_ID  WHERE ID\_Room = p\_ID\_Room;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Room\_Delete (  p\_ID\_Room INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Room  WHERE ID\_Room = p\_ID\_Room;  END;  $$; |
|  | Добавление |  |
| -- Таблица Комплектация (Configuration)  -- Добавление  CREATE OR REPLACE PROCEDURE Configuration\_Insert (  p\_Furniture\_Configuration VARCHAR(14)  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Configuration (Furniture\_Configuration)  VALUES (p\_Furniture\_Configuration);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Configuration\_Update (  p\_ID\_Configuration INT,  p\_Furniture\_Configuration VARCHAR(14)  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Configuration  SET Furniture\_Configuration = p\_Furniture\_Configuration  WHERE ID\_Configuration = p\_ID\_Configuration;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Configuration\_Delete (  p\_ID\_Configuration INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Configuration  WHERE ID\_Configuration = p\_ID\_Configuration;  END;  $$; |
|  | Добавление |  |
| -- Таблица Комплектация номера (Room\_Configuration)  -- Добавление  CREATE OR REPLACE PROCEDURE Room\_Configuration\_Insert (  p\_Quantity\_Room\_Configuration INT,  p\_Configuration\_ID INT,  p\_Room\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Room\_Configuration (Quantity\_Room\_Configuration, Configuration\_ID, Room\_ID)  VALUES (p\_Quantity\_Room\_Configuration, p\_Configuration\_ID, p\_Room\_ID);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Room\_Configuration\_Update (  p\_ID\_Room\_Configuration INT,  p\_Quantity\_Room\_Configuration INT,  p\_Configuration\_ID INT,  p\_Room\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Room\_Configuration  SET Quantity\_Room\_Configuration = p\_Quantity\_Room\_Configuration,  Configuration\_ID = p\_Configuration\_ID,  Room\_ID = p\_Room\_ID  WHERE ID\_Room\_Configuration = p\_ID\_Room\_Configuration;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Room\_Configuration\_Delete (  p\_ID\_Room\_Configuration INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Room\_Configuration  WHERE ID\_Room\_Configuration = p\_ID\_Room\_Configuration;  END;  $$; |
|  | Добавление |  |
| -- Таблица Опции (Options)  -- Добавление  CREATE OR REPLACE PROCEDURE Options\_Insert (  p\_Name\_Options VARCHAR(13)  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Options (Name\_Options)  VALUES (p\_Name\_Options);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Options\_Update (  p\_ID\_Options INT,  p\_Name\_Options VARCHAR(13)  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Options  SET Name\_Options = p\_Name\_Options  WHERE ID\_Options = p\_ID\_Options;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Options\_Delete (  p\_ID\_Options INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Options  WHERE ID\_Options = p\_ID\_Options;  END;  $$; |
|  | Добавление |  |
| -- Таблица Опции номера (Room\_Options)  -- Добавление  CREATE OR REPLACE PROCEDURE Room\_Options\_Insert (  p\_Quantity\_Room\_Options INT,  p\_Option\_ID INT,  p\_Room\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Room\_Options (Quantity\_Room\_Options, Option\_ID, Room\_ID)  VALUES (p\_Quantity\_Room\_Options, p\_Option\_ID, p\_Room\_ID);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Room\_Options\_Update (  p\_ID\_Room\_Options INT,  p\_Quantity\_Room\_Options INT,  p\_Option\_ID INT,  p\_Room\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Room\_Options  SET Quantity\_Room\_Options = p\_Quantity\_Room\_Options,  Option\_ID = p\_Option\_ID,  Room\_ID = p\_Room\_ID  WHERE ID\_Room\_Options = p\_ID\_Room\_Options;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Room\_Options\_Delete (  p\_ID\_Room\_Options INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Room\_Options  WHERE ID\_Room\_Options = p\_ID\_Room\_Options;  END;  $$; |
|  | Добавление |  |
| -- Таблица Бронирование (Reservation)  -- Добавление  CREATE OR REPLACE PROCEDURE Reservation\_Insert (  p\_Num\_Reservation VARCHAR(16),  p\_Creation\_Date\_Reservation DATE,  p\_Checkin\_Date\_Reservation DATE,  p\_Checkin\_Time\_Reservation TIME,  p\_Checkout\_Date\_Reservation DATE,  p\_Checkout\_Time\_Reservation TIME,  p\_Room\_ID INT,  p\_Total\_Cost\_Reservation INT  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Reservation (Num\_Reservation, Creation\_Date\_Reservation, Checkin\_Date\_Reservation, Checkin\_Time\_Reservation, Checkout\_Date\_Reservation, Checkout\_Time\_Reservation, Room\_ID, Total\_Cost\_Reservation)  VALUES (p\_Num\_Reservation, p\_Creation\_Date\_Reservation, p\_Checkin\_Date\_Reservation, p\_Checkin\_Time\_Reservation, p\_Checkout\_Date\_Reservation, p\_Checkout\_Time\_Reservation, p\_Room\_ID, p\_Total\_Cost\_Reservation);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Reservation\_Update (  p\_ID\_Reservation INT,  p\_Num\_Reservation VARCHAR(16),  p\_Creation\_Date\_Reservation DATE,  p\_Checkin\_Date\_Reservation DATE,  p\_Checkin\_Time\_Reservation TIME,  p\_Checkout\_Date\_Reservation DATE,  p\_Checkout\_Time\_Reservation TIME,  p\_Room\_ID INT,  p\_Total\_Cost\_Reservation INT  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Reservation  SET Num\_Reservation = p\_Num\_Reservation,  Creation\_Date\_Reservation = p\_Creation\_Date\_Reservation,  Checkin\_Date\_Reservation = p\_Checkin\_Date\_Reservation,  Checkin\_Time\_Reservation = p\_Checkin\_Time\_Reservation,  Checkout\_Date\_Reservation = p\_Checkout\_Date\_Reservation,  Checkout\_Time\_Reservation = p\_Checkout\_Time\_Reservation,  Room\_ID = p\_Room\_ID,  Total\_Cost\_Reservation = p\_Total\_Cost\_Reservation  WHERE ID\_Reservation = p\_ID\_Reservation;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Reservation\_Delete (  p\_ID\_Reservation INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Reservation  WHERE ID\_Reservation = p\_ID\_Reservation;  END;  $$; |
|  | Добавление |  |
| -- Таблица Клиент (Client)  -- Добавление  CREATE OR REPLACE PROCEDURE Client\_Insert (  p\_Surname\_Client VARCHAR(50),  p\_Name\_Client VARCHAR(50),  p\_Patronymic\_Client VARCHAR(50),  p\_Document\_Series\_Client VARCHAR(5),  p\_Document\_Number\_Client INT,  p\_Date\_of\_Birth\_Client DATE,  p\_Gender\_Client VARCHAR(3),  p\_Issued\_By\_Client VARCHAR(70),  p\_Issued\_Date\_Client DATE,  p\_Code\_Department\_Client VARCHAR(7),  p\_Phone\_Client VARCHAR(16),  p\_Email\_Address\_Client VARCHAR(70),  p\_Login\_Client VARCHAR(50),  p\_Password\_Client VARCHAR(50)  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Client (Surname\_Client, Name\_Client, Patronymic\_Client, Document\_Series\_Client, Document\_Number\_Client, Date\_of\_Birth\_Client, Gender\_Client, Issued\_By\_Client, Issued\_Date\_Client, Code\_Department\_Client, Phone\_Client, Email\_Address\_Client, Login\_Client, Password\_Client)  VALUES (p\_Surname\_Client, p\_Name\_Client, p\_Patronymic\_Client, p\_Document\_Series\_Client, p\_Document\_Number\_Client, p\_Date\_of\_Birth\_Client, p\_Gender\_Client, p\_Issued\_By\_Client, p\_Issued\_Date\_Client, p\_Code\_Department\_Client, p\_Phone\_Client, p\_Email\_Address\_Client, p\_Login\_Client, p\_Password\_Client);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Client\_Update (  p\_ID\_Client INT,  p\_Surname\_Client VARCHAR(50),  p\_Name\_Client VARCHAR(50),  p\_Patronymic\_Client VARCHAR(50),  p\_Document\_Series\_Client VARCHAR(5),  p\_Document\_Number\_Client INT,  p\_Date\_of\_Birth\_Client DATE,  p\_Gender\_Client VARCHAR(3),  p\_Issued\_By\_Client VARCHAR(70),  p\_Issued\_Date\_Client DATE,  p\_Code\_Department\_Client VARCHAR(7),  p\_Phone\_Client VARCHAR(16),  p\_Email\_Address\_Client VARCHAR(70),  p\_Login\_Client VARCHAR(50),  p\_Password\_Client VARCHAR(50)  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Client  SET Surname\_Client = p\_Surname\_Client,  Name\_Client = p\_Name\_Client,  Patronymic\_Client = p\_Patronymic\_Client,  Document\_Series\_Client = p\_Document\_Series\_Client,  Document\_Number\_Client = p\_Document\_Number\_Client,  Date\_of\_Birth\_Client = p\_Date\_of\_Birth\_Client,  Gender\_Client = p\_Gender\_Client,  Issued\_By\_Client = p\_Issued\_By\_Client,  Issued\_Date\_Client = p\_Issued\_Date\_Client,  Code\_Department\_Client = p\_Code\_Department\_Client,  Phone\_Client = p\_Phone\_Client,  Email\_Address\_Client = p\_Email\_Address\_Client,  Login\_Client = p\_Login\_Client,  Password\_Client = p\_Password\_Client  WHERE ID\_Client = p\_ID\_Client;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Client\_Delete (  p\_ID\_Client INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Client  WHERE ID\_Client = p\_ID\_Client;  END;  $$; |
|  | Добавление |  |
| -- Таблица Бронирование клиента (Client\_Reservation)  -- Добавление  CREATE OR REPLACE PROCEDURE Client\_Reservation\_Insert (  p\_Client\_ID INT,  p\_Reservation\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Client\_Reservation (Client\_ID, Reservation\_ID)  VALUES (p\_Client\_ID, p\_Reservation\_ID);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Client\_Reservation\_Update (  p\_ID\_Client\_Reservation INT,  p\_Client\_ID INT,  p\_Reservation\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Client\_Reservation  SET Client\_ID = p\_Client\_ID,  Reservation\_ID = p\_Reservation\_ID  WHERE ID\_Client\_Reservation = p\_ID\_Client\_Reservation;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Client\_Reservation\_Delete (  p\_ID\_Client\_Reservation INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Client\_Reservation  WHERE ID\_Client\_Reservation = p\_ID\_Client\_Reservation;  END;  $$; |
|  | Добавление |  |
| -- Таблица Дополнительные услуги (Add\_Services)  -- Добавление  CREATE OR REPLACE PROCEDURE Add\_Services\_Insert (  p\_Name\_Add\_Services VARCHAR(8),  p\_Cost\_Add\_Services INT  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Add\_Services (Name\_Add\_Services, Cost\_Add\_Services)  VALUES (p\_Name\_Add\_Services, p\_Cost\_Add\_Services);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Add\_Services\_Update (  p\_ID\_Add\_Services INT,  p\_Name\_Add\_Services VARCHAR(8),  p\_Cost\_Add\_Services INT  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Add\_Services  SET Name\_Add\_Services = p\_Name\_Add\_Services,  Cost\_Add\_Services = p\_Cost\_Add\_Services  WHERE ID\_Add\_Services = p\_ID\_Add\_Services;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Add\_Services\_Delete (  p\_ID\_Add\_Services INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Add\_Services  WHERE ID\_Add\_Services = p\_ID\_Add\_Services;  END;  $$; |
|  | Добавление |  |
| -- Дополнительные услуги бронирования (Add\_Services\_Reservation)  -- Добавление  CREATE OR REPLACE PROCEDURE Add\_Services\_Reservation\_Insert (  p\_Add\_Services\_ID INT,  p\_Reservation\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Add\_Services\_Reservation (Add\_Services\_ID, Reservation\_ID)  VALUES (p\_Add\_Services\_ID, p\_Reservation\_ID);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Add\_Services\_Reservation\_Update (  p\_ID\_Add\_Services\_Reservation INT,  p\_Add\_Services\_ID INT,  p\_Reservation\_ID INT  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Add\_Services\_Reservation  SET Add\_Services\_ID = p\_Add\_Services\_ID,  Reservation\_ID = p\_Reservation\_ID  WHERE ID\_Add\_Services\_Reservation = p\_ID\_Add\_Services\_Reservation;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Add\_Services\_Reservation\_Delete (  p\_ID\_Add\_Services\_Reservation INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Add\_Services\_Reservation  WHERE ID\_Add\_Services\_Reservation = p\_ID\_Add\_Services\_Reservation;  END;  $$; |
|  | Добавление |  |
| -- Дополнительные услуги бронирования (Add\_Services\_Reservation)  -- Добавление  CREATE OR REPLACE PROCEDURE Employee\_Insert (  p\_Surname\_Employee VARCHAR(50),  p\_Name\_Employee VARCHAR(50),  p\_Patronymic\_Employee VARCHAR(50),  p\_Login\_Employee VARCHAR(50),  p\_Password\_Employee VARCHAR(50)  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Employee (Surname\_Employee, Name\_Employee, Patronymic\_Employee, Login\_Employee, Password\_Employee)  VALUES (p\_Surname\_Employee, p\_Name\_Employee, p\_Patronymic\_Employee, p\_Login\_Employee, p\_Password\_Employee);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Employee\_Update (  p\_ID\_Employee INT,  p\_Surname\_Employee VARCHAR(50),  p\_Name\_Employee VARCHAR(50),  p\_Patronymic\_Employee VARCHAR(50),  p\_Login\_Employee VARCHAR(50),  p\_Password\_Employee VARCHAR(50)  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Employee  SET Surname\_Employee = p\_Surname\_Employee,  Name\_Employee = p\_Name\_Employee,  Patronymic\_Employee = p\_Patronymic\_Employee,  Login\_Employee = p\_Login\_Employee,  Password\_Employee = p\_Password\_Employee  WHERE ID\_Employee = p\_ID\_Employee;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Employee\_Delete (  p\_ID\_Employee INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Employee  WHERE ID\_Employee = p\_ID\_Employee;  END;  $$; |
|  | Добавление |  |
| -- Договор (Contract)  -- Добавление  CREATE OR REPLACE PROCEDURE Contract\_Insert (  p\_Number\_Contract VARCHAR(12),  p\_Reservation\_ID INT,  p\_Employee\_ID INT,  p\_Creation\_Date\_Contract DATE,  p\_Creation\_Time\_Contract TIME  )  LANGUAGE plpgsql  AS $$  BEGIN  INSERT INTO Contract (Number\_Contract, Reservation\_ID, Employee\_ID, Creation\_Date\_Contract, Creation\_Time\_Contract)  VALUES (p\_Number\_Contract, p\_Reservation\_ID, p\_Employee\_ID, p\_Creation\_Date\_Contract, p\_Creation\_Time\_Contract);  END;  $$; |
| Изменение |
| -- Изменение  CREATE OR REPLACE PROCEDURE Contract\_Update (  p\_ID\_Contract INT,  p\_Number\_Contract VARCHAR(12),  p\_Reservation\_ID INT,  p\_Employee\_ID INT,  p\_Creation\_Date\_Contract DATE,  p\_Creation\_Time\_Contract TIME  )  LANGUAGE plpgsql  AS $$  BEGIN  UPDATE Contract  SET Number\_Contract = p\_Number\_Contract,  Reservation\_ID = p\_Reservation\_ID,  Employee\_ID = p\_Employee\_ID,  Creation\_Date\_Contract = p\_Creation\_Date\_Contract,  Creation\_Time\_Contract = p\_Creation\_Time\_Contract  WHERE ID\_Contract = p\_ID\_Contract;  END;  $$; |
| Удаление |
| -- Удаление  CREATE OR REPLACE PROCEDURE Contract\_Delete (  p\_ID\_Contract INT  )  LANGUAGE plpgsql  AS $$  BEGIN  DELETE FROM Contract  WHERE ID\_Contract = p\_ID\_Contract;  END;  $$; |

1. Распределение прав доступа к хранимым процедурам БД;

Таблица 2 – Права доступа к хранимым процедурам БД

| Роли | | Клиент | Сотрудник | Администратор |
| --- | --- | --- | --- | --- |
| Название объекта | Функции |
| Class\_Insert | Вызов |  |  | Х |
| Class\_Update | Вызов |  |  | Х |
| Class\_Delete | Вызов |  |  | Х |
| Status\_room\_Insert | Вызов |  |  | Х |
| Status\_room\_Update | Вызов |  |  | Х |
| Status\_room\_Delete | Вызов |  |  | Х |
| Room\_Insert | Вызов |  |  | Х |
| Room\_Update | Вызов |  |  | Х |
| Room\_Delete | Вызов |  |  | Х |
| Configuration\_Insert | Вызов |  |  | Х |
| Configuration\_Update | Вызов |  |  | Х |
| Configuration\_Delete | Вызов |  |  | Х |
| Room\_Configuration\_Insert | Вызов |  | Х |  |
| Room\_Configuration\_Update | Вызов |  | Х |  |
| Room\_Configuration\_Delete | Вызов |  |  | Х |
| Options\_Insert | Вызов |  |  | Х |
| Options\_Update | Вызов |  |  | Х |
| Options\_Delete | Вызов |  |  | Х |
| Room\_Options\_Insert | Вызов |  | Х |  |
| Room\_Options\_Update | Вызов |  | Х |  |
| Room\_Options\_Delete | Вызов |  |  | Х |
| Reservation\_Insert | Вызов |  | Х |  |
| Reservation\_Update | Вызов |  | Х |  |
| Reservation\_Delete | Вызов |  |  | Х |
| Client\_Insert | Вызов |  | Х |  |
| Client\_Update | Вызов |  | Х |  |
| Client\_Delete | Вызов |  |  | Х |
| Client\_Reservation\_Insert | Вызов |  | Х |  |
| Client\_Reservation\_Update | Вызов |  | Х |  |
| Client\_Reservation\_Delete | Вызов |  |  | Х |
| Add\_Services\_Insert | Вызов |  |  | Х |
| Add\_Services\_Update | Вызов |  |  | Х |
| Add\_Services\_Delete | Вызов |  |  | Х |
| Add\_Services\_Reservation\_Insert | Вызов |  | Х |  |
| Add\_Services\_Reservation\_Update | Вызов |  | Х |  |
| Add\_Services\_Reservation\_Delete | Вызов |  |  | X |
| Employee\_Insert | Вызов |  |  | Х |
| Employee\_Update | Вызов |  |  | Х |
| Employee\_Delete | Вызов |  |  | Х |
| Contract\_Insert | Вызов |  | Х |  |
| Contract\_Update | Вызов |  | Х |  |
| Contract\_Delete | Вызов |  |  | Х |

1. Выдача прав доступа к хранимым процедурам БД.

Таблица 3 – Реализация разграничения прав доступа

| Название роли | Название объекта | Функция | Скрипт |
| --- | --- | --- | --- |
| rl\_employee | Room\_Configuration\_Insert | Execute | GRANT EXECUTE ON PROCEDURE Room\_Configuration\_Insert TO rl\_employee; |
| Room\_Configuration\_Update | GRANT EXECUTE ON PROCEDURE Room\_Configuration\_Update TO rl\_employee; |
| Room\_Configuration\_Delete | GRANT EXECUTE ON PROCEDURE Room\_Configuration\_Delete TO rl\_employee; |
| Room\_Options\_Insert | GRANT EXECUTE ON PROCEDURE Room\_Options\_Insert TO rl\_employee; |
| Room\_Options\_Update | GRANT EXECUTE ON PROCEDURE Room\_Options\_Update TO rl\_employee; |
| Room\_Options\_Delete | GRANT EXECUTE ON PROCEDURE Room\_Options\_Delete TO rl\_employee; |
| Reservation\_Insert | GRANT EXECUTE ON PROCEDURE Reservation\_Insert TO rl\_employee; |
| Reservation\_Update | GRANT EXECUTE ON PROCEDURE Reservation\_Update TO rl\_employee; |
| Reservation\_Delete | GRANT EXECUTE ON PROCEDURE Reservation\_Delete TO rl\_employee; |
| Client\_Insert | GRANT EXECUTE ON PROCEDURE Client\_Insert TO rl\_employee; |
| Client\_Update | GRANT EXECUTE ON PROCEDURE Client\_Update TO rl\_employee; |
| Client\_Delete | GRANT EXECUTE ON PROCEDURE Client\_Delete TO rl\_employee; |
| Client\_Reservation\_Insert | GRANT EXECUTE ON PROCEDURE Client\_Reservation\_Insert TO rl\_employee; |
| Client\_Reservation\_Update | GRANT EXECUTE ON PROCEDURE Client\_Reservation\_Update TO rl\_employee; |
| Client\_Reservation\_Delete | GRANT EXECUTE ON PROCEDURE Client\_Reservation\_Delete TO rl\_employee; |
| Add\_Services\_Reservation\_Insert | GRANT EXECUTE ON PROCEDURE Add\_Services\_Reservation\_Insert TO rl\_employee; |
| Add\_Services\_Reservation\_Update | GRANT EXECUTE ON PROCEDURE Add\_Services\_Reservation\_Update TO rl\_employee; |
| Add\_Services\_Reservation\_Delete | GRANT EXECUTE ON PROCEDURE Add\_Services\_Reservation\_Delete TO rl\_employee; |
| Contract\_Insert | GRANT EXECUTE ON PROCEDURE Contract\_Insert TO rl\_employee; |
| Contract\_Update | GRANT EXECUTE ON PROCEDURE Contract\_Update TO rl\_employee; |
| Contract\_Delete | GRANT EXECUTE ON PROCEDURE Contract\_Delete TO rl\_employee; |
| rl\_administrator | Class\_Insert | Execute | GRANT EXECUTE ON PROCEDURE Class\_Insert TO rl\_administrator; |
| Class\_Update | GRANT EXECUTE ON PROCEDURE Class\_Update TO rl\_administrator; |
| Class\_Delete | GRANT EXECUTE ON PROCEDURE Class\_Delete TO rl\_administrator; |
| Status\_room\_Insert | GRANT EXECUTE ON PROCEDURE Status\_room\_Insert TO rl\_administrator; |
| Status\_room\_Update | GRANT EXECUTE ON PROCEDURE Status\_room\_Update TO rl\_administrator; |
| Status\_room\_Delete | GRANT EXECUTE ON PROCEDURE Status\_room\_Delete TO rl\_administrator; |
| Room\_Insert | GRANT EXECUTE ON PROCEDURE Room\_Insert TO rl\_administrator; |
| Room\_Update | GRANT EXECUTE ON PROCEDURE Room\_Update TO rl\_administrator; |
| Room\_Delete | GRANT EXECUTE ON PROCEDURE Room\_Delete TO rl\_administrator; |
| Configuration\_Insert | GRANT EXECUTE ON PROCEDURE Configuration\_Insert TO rl\_administrator; |
| Configuration\_Update | GRANT EXECUTE ON PROCEDURE Configuration\_Update TO rl\_administrator; |
| Configuration\_Delete | GRANT EXECUTE ON PROCEDURE Configuration\_Delete TO rl\_administrator; |
| Options\_Insert | GRANT EXECUTE ON PROCEDURE Options\_Insert TO rl\_administrator; |
| Options\_Update | GRANT EXECUTE ON PROCEDURE Options\_Update TO rl\_administrator; |
| Options\_Delete | GRANT EXECUTE ON PROCEDURE Options\_Delete TO rl\_administrator; |
| Add\_Services\_Insert | GRANT EXECUTE ON PROCEDURE Add\_Services\_Insert TO rl\_administrator; |
| Add\_Services\_Update | GRANT EXECUTE ON PROCEDURE Add\_Services\_Update TO rl\_administrator; |
| Add\_Services\_Delete | GRANT EXECUTE ON PROCEDURE Add\_Services\_Delete TO rl\_administrator; |
| Employee\_Insert | GRANT EXECUTE ON PROCEDURE Employee\_Insert TO rl\_administrator; |
| Employee\_Update | GRANT EXECUTE ON PROCEDURE Employee\_Update TO rl\_administrator; |
| Employee\_Delete | GRANT EXECUTE ON PROCEDURE Employee\_Delete TO rl\_administrator; |
| Room\_Configuration\_Insert | GRANT EXECUTE ON PROCEDURE Room\_Configuration\_Insert TO rl\_administrator; |
| Room\_Configuration\_Update | GRANT EXECUTE ON PROCEDURE Room\_Configuration\_Update TO rl\_administrator; |
| Room\_Configuration\_Delete | GRANT EXECUTE ON PROCEDURE Room\_Configuration\_Delete TO rl\_administrator; |
| Room\_Options\_Insert | GRANT EXECUTE ON PROCEDURE Room\_Options\_Insert TO rl\_administrator; |
| Room\_Options\_Update | GRANT EXECUTE ON PROCEDURE Room\_Options\_Update TO rl\_administrator; |
| Room\_Options\_Delete | GRANT EXECUTE ON PROCEDURE Room\_Options\_Delete TO rl\_administrator; |
| Reservation\_Insert | GRANT EXECUTE ON PROCEDURE Reservation\_Insert TO rl\_administrator; |
| Reservation\_Update | GRANT EXECUTE ON PROCEDURE Reservation\_Update TO rl\_administrator; |
| Reservation\_Delete | GRANT EXECUTE ON PROCEDURE Reservation\_Delete TO rl\_administrator; |
| Client\_Insert | GRANT EXECUTE ON PROCEDURE Client\_Insert TO rl\_administrator; |
| Client\_Update | GRANT EXECUTE ON PROCEDURE Client\_Update TO rl\_administrator; |
| Client\_Delete | GRANT EXECUTE ON PROCEDURE Client\_Delete TO rl\_administrator; |
| Client\_Reservation\_Insert | GRANT EXECUTE ON PROCEDURE Client\_Reservation\_Insert TO rl\_administrator; |
| Client\_Reservation\_Update | GRANT EXECUTE ON PROCEDURE Client\_Reservation\_Update TO rl\_administrator; |
| Client\_Reservation\_Delete | GRANT EXECUTE ON PROCEDURE Client\_Reservation\_Delete TO rl\_administrator; |
| Add\_Services\_Reservation\_Insert | GRANT EXECUTE ON PROCEDURE Add\_Services\_Reservation\_Insert TO rl\_administrator; |
| Add\_Services\_Reservation\_Update | GRANT EXECUTE ON PROCEDURE Add\_Services\_Reservation\_Update TO rl\_administrator; |
| Add\_Services\_Reservation\_Delete | GRANT EXECUTE ON PROCEDURE Add\_Services\_Reservation\_Delete TO rl\_administrator; |
| Contract\_Insert | GRANT EXECUTE ON PROCEDURE Contract\_Insert TO rl\_administrator; |
| Contract\_Update | GRANT EXECUTE ON PROCEDURE Contract\_Update TO rl\_administrator; |
| Contract\_Delete | GRANT EXECUTE ON PROCEDURE Contract\_Delete TO rl\_administrator; |