**Этапы выполнения:**

*Для выполнения данной работы, создайте новый файл в Microsoft SQL Server Management Studio, для сопровождения хранимых процедур.*

1. Для сопровождения хранимых процедур, открыть файл со скриптами хранимых процедур и выписать 3 процедур, которым необходимо реализовать вывод сообщений об ошибках;

| Название | Было | Стало |
| --- | --- | --- |
| [dbo].[Inventory\_insert] | create or alter procedure [dbo].[Inventory\_insert]  @Number\_Inventory [varchar](16),  @Count\_Inventory [int],  @Cost\_Inventory [decimal](10,3)  as  begin  if (@Number\_Inventory not like 'ИнВ-[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]')  begin  print('Неверный формат номера инвентаря!');  return;  end  if (@Count\_Inventory < 0)  begin  print('Количество инвентаря не может быть отрицательным!');  return;  end  if (@Cost\_Inventory < 0)  begin  print('Стоимость инвентаря не может быть отрицательной!');  return;  end  insert into [dbo].[Inventory] (Number\_Inventory, Count\_Inventory, Cost\_Inventory)  values (@Number\_Inventory, @Count\_Inventory, @Cost\_Inventory);  end  go | CREATE OR ALTER PROCEDURE [dbo].[Inventory\_insert]  @Number\_Inventory VARCHAR(16),  @Count\_Inventory INT,  @Cost\_Inventory DECIMAL(10,3)  AS  BEGIN  IF (@Number\_Inventory NOT LIKE 'ИнВ-[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]')  BEGIN  THROW 50001, 'Неверный формат номера инвентаря!', 1;  RETURN;  END  IF (@Count\_Inventory < 0)  BEGIN  THROW 50002, 'Количество инвентаря не может быть отрицательным!', 1;  RETURN;  END  IF (@Cost\_Inventory < 0)  BEGIN  THROW 50003, 'Стоимость инвентаря не может быть отрицательной!', 1;  RETURN;  END  INSERT INTO [dbo].[Inventory] (Number\_Inventory, Count\_Inventory, Cost\_Inventory)  VALUES (@Number\_Inventory, @Count\_Inventory, @Cost\_Inventory);  END  GO |
| [dbo].[Contract\_update] | create or alter procedure [dbo].[Contract\_update]  @ID\_Contract [int],  @Employee\_ID [int],  @Game\_Type\_ID [int],  @Map\_ID [int],  @Number\_Contract [varchar](10),  @Cost\_Contract [decimal](10,3),  @DateTime\_Forming\_Contract [datetime],  @Game\_Duration\_Contract [decimal](5,2),  @Game\_Start\_Time\_Contract [time],  @Game\_End\_Time\_Contract [time],  @Final\_Cost\_Contract [decimal](10,3)  as  begin  if (@Number\_Contract not like 'GM-[0-9][0-9][0-9][0-9][0-9][0-9][0-9]')  begin  print('Неверный формат номера контракта!');  return;  end  if (@Cost\_Contract < 0)  begin  print('Стоимость контракта не может быть отрицательной!');  return;  end  if (@Game\_Duration\_Contract < 0)  begin  print('Продолжительность игры не может быть отрицательной!');  return;  end  if (@Game\_Start\_Time\_Contract > @Game\_End\_Time\_Contract)  begin  print('Время начала игры не может быть позже времени окончания игры!');  return;  end  if (@Final\_Cost\_Contract <= 0)  begin  print('Итоговая стоимость контракта должна быть больше 0!');  return;  end  update [dbo].[Contract]  set Employee\_ID = @Employee\_ID,  Game\_Type\_ID = @Game\_Type\_ID,  Map\_ID = @Map\_ID,  Number\_Contract = @Number\_Contract,  Cost\_Contract = @Cost\_Contract,  DateTime\_Forming\_Contract = @DateTime\_Forming\_Contract,  Game\_Duration\_Contract = @Game\_Duration\_Contract,  Game\_Start\_Time\_Contract = @Game\_Start\_Time\_Contract,  Game\_End\_Time\_Contract = @Game\_End\_Time\_Contract,  Final\_Cost\_Contract = @Final\_Cost\_Contract  where ID\_Contract = @ID\_Contract;  end  go | CREATE OR ALTER PROCEDURE [dbo].[Contract\_update]  @ID\_Contract INT,  @Employee\_ID INT,  @Game\_Type\_ID INT,  @Map\_ID INT,  @Number\_Contract VARCHAR(10),  @Cost\_Contract DECIMAL(10,3),  @DateTime\_Forming\_Contract DATETIME,  @Game\_Duration\_Contract DECIMAL(5,2),  @Game\_Start\_Time\_Contract TIME,  @Game\_End\_Time\_Contract TIME,  @Final\_Cost\_Contract DECIMAL(10,3)  AS  BEGIN  IF (@Number\_Contract NOT LIKE 'GM-[0-9][0-9][0-9][0-9][0-9][0-9][0-9]')  BEGIN  THROW 50001, 'Неверный формат номера контракта!', 1;  RETURN;  END  IF (@Cost\_Contract < 0)  BEGIN  THROW 50002, 'Стоимость контракта не может быть отрицательной!', 1;  RETURN;  END  IF (@Game\_Duration\_Contract < 0)  BEGIN  THROW 50003, 'Продолжительность игры не может быть отрицательной!', 1;  RETURN;  END  IF (@Game\_Start\_Time\_Contract > @Game\_End\_Time\_Contract)  BEGIN  THROW 50004, 'Время начала игры не может быть позже времени окончания игры!', 1;  RETURN;  END  IF (@Final\_Cost\_Contract <= 0)  BEGIN  THROW 50005, 'Итоговая стоимость контракта должна быть больше 0!', 1;  RETURN;  END  UPDATE [dbo].[Contract]  SET Employee\_ID = @Employee\_ID,  Game\_Type\_ID = @Game\_Type\_ID,  Map\_ID = @Map\_ID,  Number\_Contract = @Number\_Contract,  Cost\_Contract = @Cost\_Contract,  DateTime\_Forming\_Contract = @DateTime\_Forming\_Contract,  Game\_Duration\_Contract = @Game\_Duration\_Contract,  Game\_Start\_Time\_Contract = @Game\_Start\_Time\_Contract,  Game\_End\_Time\_Contract = @Game\_End\_Time\_Contract,  Final\_Cost\_Contract = @Final\_Cost\_Contract  WHERE ID\_Contract = @ID\_Contract;  END  GO |
| [dbo].[Player\_Type\_delete] | create or alter procedure [dbo].[Player\_Type\_delete]  @ID\_Player\_Type [int]  as  begin  declare @any\_child\_record [int] = (select count(\*) from [dbo].[Client\_Contract] where Player\_Type\_ID = @ID\_Player\_Type)  if (@any\_child\_record > 0)  begin  print('Тип игрока не может быть удален, так как в таблице "Client\_Contract", есть связанные данные!');  return;  end  delete from [dbo].[Player\_Type]  where ID\_Player\_Type = @ID\_Player\_Type;  end  go | CREATE OR ALTER PROCEDURE [dbo].[Player\_Type\_delete]  @ID\_Player\_Type INT  AS  BEGIN  DECLARE @any\_child\_record INT = (SELECT COUNT(\*) FROM [dbo].[Client\_Contract] WHERE Player\_Type\_ID = @ID\_Player\_Type)  IF (@any\_child\_record > 0)  BEGIN  THROW 50001, 'Тип игрока не может быть удален, так как в таблице "Client\_Contract" есть связанные данные!', 1;  RETURN;  END    DELETE FROM [dbo].[Player\_Type]  WHERE ID\_Player\_Type = @ID\_Player\_Type;  END  GO |

1. Продемонстрировать результат изменения структуры хранимых процедур, с помощью их вызова;

| Скрипт вызова | Результат |
| --- | --- |
| EXEC [dbo].[Inventory\_insert]  @Number\_Inventory = 'ИнВ-00000001',  @Count\_Inventory = -5,  @Cost\_Inventory = 1500.00;  GO |  |
| EXEC [dbo].[Contract\_update]  @ID\_Contract = 1,  @Employee\_ID = 1,  @Game\_Type\_ID = 2,  @Map\_ID = 3,  @Number\_Contract = 'GM-000000',  @Cost\_Contract = 3000.00,  @DateTime\_Forming\_Contract = '2023-10-05 14:00:00',  @Game\_Duration\_Contract = 3.0,  @Game\_Start\_Time\_Contract = '14:30',  @Game\_End\_Time\_Contract = '17:30',  @Final\_Cost\_Contract = 9000.00;  GO |  |
| EXEC [dbo].[Player\_Type\_delete] @ID\_Player\_Type = 1;  GO |  |

1. Из описания предметной области и подсистем, определить роли пользователей;

Название предметной области: Пеинтбольный клуб

Организация занимается, предоставлением развлекательных услуг по проведению игр с использованием маркеров с краской. Сотрудники организации формируют договора с клиентами на проведение игр, различных типов, с различным инвентарём, на различных картах. Карты могут быть скомбинированы по требованию клиентов. Сотрудники могут просматривать собственные проведённые договора, а клиенты могут просматривать данные своих игр.

Название первой подсистемы: Учёт карт и инвентаря

Для проведения игр, администратору клуба, необходимо сформировать информацию по доступным картам и инвентарю. Карты формируются по следующим показателям: общая площадь в м2 , длина и ширина в метрах, приблизительный рельеф местности, план карты. Так же дополнительно указывается какие постройки или сооружения присутствуют на карте. В зависимости от карты и построек на ней формируется итоговая цена за карту. Помимо карты, посетители могут при необходимости докупить инвентарь в который входят: защитная форма, маркеры, шарики (у каждого инвентаря есть свой номер, марка и модель, описание с характеристиками и цена).

Название второй подсистемы: Организация игр

Для организации игры, клиент должен оформить договор с предоставлением, полных паспортных данных, контактный телефон и адрес электронной почты и персональные паспортные данные игроков, участвующих с основным игроком в игре. Все игроки должны представить номер ОМС. Игрок выбирает карту, выбирает любой тип игры: (все против всех, командный матч, на выбывание, штурм, захват флага – каждый тип имеет собственную стоимость), определяется с дополнительными элементами на карте, определяет продолжительность игры (каждые пол часа имеют фиксированную денежную ставку), при необходимости приобретает инвентарь, после чего формируется общий договор в котором указаны данные, игрока заказчика и выбранные опции по игре, номер договора, дата и время формирования, общая стоимость игры, а на каждого участника формируется отдельное соглашение, приложение к договору, с указанием номера основного договора, номера дополнительного соглашения и данные каждого участника по отдельности.

*Для выполнения данной работы, создайте новый файл в Microsoft SQL Server Management Studio, для работы с ролями.*

1. Выписать список всех объектов базы данных, с классификацией на метаданные, выписать функции и роли. (Х – роли предоставлена данная функция. 0 – функция ограничена, автоматизацией триггера);

| Роли | | | Сотрудник | | Клиент | | Администратор клуба | | Заказчик | | Администратор | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Название объекта | Функции | |
| Employee | Выборка | | X | |  | | X | |  | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Client | Выборка | | X | |  | |  | | X | | X | |
| Добавление | | X | |  | |  | | X | | X | |
| Изменение | | X | |  | |  | | X | | X | |
| Удаление | | X | |  | |  | | X | | X | |
| Map | Выборка | | X | |  | | X | |  | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Game\_Type | Выборка | | X | | X | | X | | X | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Inventory | Выборка | | X | |  | | X | | X | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Characteristic | Выборка | | X | | X | | X | | X | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Contract | Выборка | | X | | X | | X | | X | | X | |
| Добавление | | X | |  | |  | | X | |  | |
| Изменение | | X | |  | |  | | X | |  | |
| Удаление | | X | |  | |  | | X | |  | |
| Client\_Contract | Выборка | | X | | X | |  | | X | |  | |
| Добавление | | X | |  | |  | |  | |  | |
| Изменение | | X | |  | |  | |  | |  | |
| Удаление | | X | |  | |  | |  | |  | |
| Inventory\_Characteristic | Выборка | | X | | X | | X | | X | |  | |
| Добавление | |  | |  | | X | |  | |  | |
| Изменение | |  | |  | | X | |  | |  | |
| Удаление | |  | |  | | X | |  | |  | |
| Inventory\_Contract | Выборка | | X | | X | | X | | X | |  | |
| Добавление | | X | |  | |  | | X | |  | |
| Изменение | | X | |  | |  | | X | |  | |
| Удаление | | X | |  | |  | | X | |  | |
| Additional\_Client\_Contract | Выборка | | X | | X | | X | | X | |  | |
| Добавление | | X | |  | |  | | X | |  | |
| Изменение | | X | |  | |  | | X | |  | |
| Удаление | | X | |  | |  | | X | |  | |
| Player\_Type | Выборка | | X | |  | | X | |  | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Armor\_Type | Выборка | | X | | X | | X | |  | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Additional\_Inventory | Выборка | | X | | X | |  | | X | |  | |
| Добавление | | X | |  | |  | | X | |  | |
| Изменение | | X | |  | |  | | X | |  | |
| Удаление | | X | |  | |  | | X | |  | |
| Mark | Выборка | | X | |  | | X | |  | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Model | Выборка | | X | |  | | X | |  | | X | |
| Добавление | |  | |  | | X | |  | | X | |
| Изменение | |  | |  | | X | |  | | X | |
| Удаление | |  | |  | | X | |  | | X | |
| Mark\_Model\_Inventory | Выборка | | X | |  | | X | | X | | X | |
| Добавление | | X | |  | | X | |  | | X | |
| Изменение | | X | |  | | X | |  | | X | |
| Удаление | | X | |  | | X | |  | | X | |
| Роли | | | | Сотрудник | | Клиент | | Администратор клуба | | Заказчик | | Администратор | |
| Название объекта | | Функции | |
| Employee\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Employee\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Employee\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Client\_Insert | | Вызов | | X | |  | |  | | X | | X | |
| Client\_Update | | Вызов | | X | |  | |  | | X | | X | |
| Client\_Delete | | Вызов | | X | |  | |  | | X | | X | |
| Map\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Map\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Map\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Game\_Type\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Game\_Type\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Game\_Type\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Inventory\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Inventory\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Inventory\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Characteristic\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Characteristic\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Characteristic\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Contract\_Insert | | Вызов | | X | |  | | X | | X | |  | |
| Contract\_Update | | Вызов | | X | |  | |  | | X | |  | |
| Contract\_Delete | | Вызов | | X | |  | |  | | X | |  | |
| Client\_Contract\_Insert | | Вызов | | X | |  | |  | |  | |  | |
| Client\_Contract\_Update | | Вызов | | X | |  | |  | |  | |  | |
| Client\_Contract\_Delete | | Вызов | | X | |  | |  | |  | |  | |
| Inventory\_Characteristic\_Insert | | Вызов | |  | |  | | X | |  | |  | |
| Inventory\_Characteristic\_Update | | Вызов | |  | |  | | X | |  | |  | |
| Inventory\_Characteristic\_Delete | | Вызов | |  | |  | | X | |  | |  | |
| Inventory\_Contract\_Insert | | Вызов | | X | |  | |  | | X | |  | |
| Inventory\_Contract\_Update | | Вызов | | X | |  | |  | | X | |  | |
| Inventory\_Contract\_Delete | | Вызов | | X | |  | |  | | X | |  | |
| Additional\_Client\_Contract\_Insert | | Вызов | | X | |  | |  | | X | |  | |
| Additional\_Client\_Contract\_Update | | Вызов | | X | |  | |  | | X | |  | |
| Additional\_Client\_Contract\_Delete | | Вызов | | X | |  | |  | | X | |  | |
| Player\_Type\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Player\_Type\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Player\_Type\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Armor\_Type\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Armor\_Type\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Armor\_Type\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Additional\_Inventory\_Insert | | Вызов | | X | |  | |  | | X | |  | |
| Additional\_Inventory\_Update | | Вызов | | X | |  | |  | | X | |  | |
| Additional\_Inventory\_Delete | | Вызов | | X | |  | |  | | X | |  | |
| Mark\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Mark\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Mark\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Model\_Insert | | Вызов | |  | |  | | X | |  | | X | |
| Model\_Update | | Вызов | |  | |  | | X | |  | | X | |
| Model\_Delete | | Вызов | |  | |  | | X | |  | | X | |
| Mark\_Model\_Inventory\_Insert | | Вызов | | X | |  | | X | |  | | X | |
| Mark\_Model\_Inventory\_Update | | Вызов | | X | |  | | X | |  | | X | |
| Mark\_Model\_Inventory\_Delete | | Вызов | | X | |  | | X | |  | | X | |

1. Создание имён входа и пользователей;

| Название роли | Реализация | Результат |
| --- | --- | --- |
| Сотрудник | create login rl\_aley\_employee with password = 'Pa$$w0rd'  go  create user rl\_aley\_employee from login rl\_aley\_employee  go |  |
| Клиент | create login rl\_aley\_client with password = 'Pa$$w0rd'  go  create user rl\_aley\_client from login rl\_aley\_client  go |
| Администратор клуба | create login rl\_aley\_club\_administrator with password = 'Pa$$w0rd'  go  create user rl\_aley\_club\_administrator from login rl\_aley\_club\_administrator  go |
| Заказчик | create login rl\_aley\_customer with password = 'Pa$$w0rd'  go  create user rl\_aley\_customer from login rl\_aley\_customer  go |
| Администратор | create login rl\_aley\_administrator with password = 'Pa$$w0rd'  go  create user rl\_aley\_administrator from login rl\_aley\_administrator  go |

1. Реализовать разграничение прав доступа к объектам БД;

| Название роли | Название объекта | Функция | Скрипт |
| --- | --- | --- | --- |
| rl\_aley\_employee | Employee | Select | GRANT SELECT ON Employee TO rl\_aley\_employee; |
| Map | GRANT SELECT ON Map TO rl\_aley\_employee; |
| Game\_Type | GRANT SELECT ON Game\_Type TO rl\_aley\_employee; |
| Characteristic | GRANT SELECT ON Characteristic TO rl\_aley\_employee; |
| Inventory\_Characteristic | GRANT SELECT ON Inventory\_Characteristic TO rl\_aley\_employee; |
| Player\_Type | GRANT SELECT ON Player\_Type TO rl\_aley\_employee; |
| Armor\_Type | GRANT SELECT ON Armor\_Type TO rl\_aley\_employee; |
| Mark | GRANT SELECT ON Mark TO rl\_aley\_employee; |
| Model | GRANT SELECT ON Model TO rl\_aley\_employee; |
| Inventory | GRANT SELECT ON Inventory TO rl\_aley\_employee; |
| Client | Select, Insert, Update, Delete | GRANT SELECT, INSERT, UPDATE, DELETE ON Client TO rl\_aley\_employee; |
| Contract | GRANT SELECT, INSERT, UPDATE, DELETE ON Contract TO rl\_aley\_employee; |
| Client\_Contract | GRANT SELECT, INSERT, UPDATE, DELETE ON Client\_Contract TO rl\_aley\_employee; |
| Inventory\_Contract | GRANT SELECT, INSERT, UPDATE, DELETE ON Inventory\_Contract TO rl\_aley\_employee; |
| Additional\_Client\_Contract | GRANT SELECT, INSERT, UPDATE, DELETE ON Additional\_Client\_Contract TO rl\_aley\_employee; |
| Additional\_Inventory | GRANT SELECT, INSERT, UPDATE, DELETE ON Additional\_Inventory TO rl\_aley\_employee; |
| Mark\_Model\_Inventory | GRANT SELECT, INSERT, UPDATE, DELETE ON mark\_model\_inventory TO rl\_aley\_employee; |
| rl\_aley \_client | Game\_Type | Select | GRANT SELECT ON Game\_Type TO rl\_aley\_client; |
| Characteristic | GRANT SELECT ON Characteristic TO rl\_aley\_client; |
| Contract | GRANT SELECT ON Contract TO rl\_aley\_client; |
| Client\_Contract | GRANT SELECT ON Client\_Contract TO rl\_aley\_client; |
| Inventory\_Characteristic | GRANT SELECT ON Inventory\_Characteristic TO rl\_aley\_client; |
| Additional\_Client\_Contract | GRANT SELECT ON Additional\_Client\_Contract TO rl\_aley\_client; |
| Armor\_Type | GRANT SELECT ON Armor\_Type TO rl\_aley\_client; |
| Additional\_Inventory | GRANT SELECT ON Additional\_Inventory TO rl\_aley\_client; |
| rl\_aley \_club\_administrator | Employee | Select, Insert, Update, Delete | GRANT SELECT, INSERT, UPDATE, DELETE ON Employee TO rl\_aley\_club\_administrator; |
| Map | GRANT SELECT, INSERT, UPDATE, DELETE ON Map TO rl\_aley\_club\_administrator; |
| Game\_Type | GRANT SELECT, INSERT, UPDATE, DELETE ON Game\_Type TO rl\_aley\_club\_administrator; |
| Characteristic | GRANT SELECT, INSERT, UPDATE, DELETE ON Characteristic TO rl\_aley\_club\_administrator; |
| Inventory\_Characteristic | GRANT SELECT, INSERT, UPDATE, DELETE ON Inventory\_Characteristic TO rl\_aley\_club\_administrator; |
| Player\_Type | GRANT SELECT, INSERT, UPDATE, DELETE ON Player\_Type TO rl\_aley\_club\_administrator; |
| Armor\_Type | GRANT SELECT, INSERT, UPDATE, DELETE ON Armor\_Type TO rl\_aley\_club\_administrator; |
| Mark | GRANT SELECT, INSERT, UPDATE, DELETE ON Mark TO rl\_aley\_club\_administrator; |
| Model | GRANT SELECT, INSERT, UPDATE, DELETE ON Model TO rl\_aley\_club\_administrator; |
| Mark\_Model\_Inventory | GRANT SELECT, INSERT, UPDATE, DELETE ON Mark\_Model\_Inventory TO rl\_aley\_club\_administrator; |
| Inventory | GRANT SELECT, INSERT, UPDATE, DELETE ON Inventory TO rl\_aley\_club\_administrator; |
| Inventory\_Contract | Select | GRANT SELECT ON Inventory\_Contract TO rl\_aley\_club\_administrator; |
| Additional\_Client\_Contract | GRANT SELECT ON Additional\_Client\_Contract TO rl\_aley\_club\_administrator; |
| Contract | Select, Update | GRANT SELECT, UPDATE ON Contract TO rl\_aley\_club\_administrator; |
| rl\_aley\_customer | Client | Select, Insert, Update, Delete | GRANT SELECT, INSERT, UPDATE, DELETE ON Client TO rl\_aley\_customer; |
| Contract | GRANT SELECT, INSERT, UPDATE, DELETE ON Contract TO rl\_aley\_customer; |
| Inventory\_Contract | GRANT SELECT, INSERT, UPDATE, DELETE ON Inventory\_Contract TO rl\_aley\_customer; |
| Additional\_Client\_Contract | GRANT SELECT, INSERT, UPDATE, DELETE ON Additional\_Client\_Contract TO rl\_aley\_customer; |
| Additional\_Inventory | GRANT SELECT, INSERT, UPDATE, DELETE ON Additional\_Inventory TO rl\_aley\_customer; |
| Game\_Type | Select | GRANT SELECT ON Game\_Type TO rl\_aley\_customer; |
| Characteristic | GRANT SELECT ON Characteristic TO rl\_aley\_customer; |
| Client\_Contract | GRANT SELECT ON Client\_Contract TO rl\_aley\_customer; |
| Inventory\_Characteristic | GRANT SELECT ON Inventory\_Characteristic TO rl\_aley\_customer; |
| Mark\_Model\_Inventory | GRANT SELECT ON Mark\_Model\_Inventory TO rl\_aley\_customer; |
| Inventory | GRANT SELECT ON Inventory TO rl\_aley\_customer; |
| rl\_ aley\_administrator | Employee | Select, Insert, Update, Delete | GRANT SELECT, INSERT, UPDATE, DELETE ON Employee TO rl\_aley\_administrator; |
| Client | GRANT SELECT, INSERT, UPDATE, DELETE ON Client TO rl\_aley\_administrator; |
| Map | GRANT SELECT, INSERT, UPDATE, DELETE ON Map TO rl\_aley\_administrator; |
| Game\_Type | GRANT SELECT, INSERT, UPDATE, DELETE ON Game\_Type TO rl\_aley\_administrator; |
| Characteristic | GRANT SELECT, INSERT, UPDATE, DELETE ON Characteristic TO rl\_aley\_administrator; |
| Player\_Type | GRANT SELECT, INSERT, UPDATE, DELETE ON Player\_Type TO rl\_aley\_administrator; |
| Armor\_Type | GRANT SELECT, INSERT, UPDATE, DELETE ON Armor\_Type TO rl\_aley\_administrator; |
| Mark | GRANT SELECT, INSERT, UPDATE, DELETE ON Mark TO rl\_aley\_administrator; |
| Model | GRANT SELECT, INSERT, UPDATE, DELETE ON Model TO rl\_aley\_administrator; |
| Mark\_Model\_Inventory | GRANT SELECT, INSERT, UPDATE, DELETE ON Mark\_Model\_Inventory TO rl\_aley\_administrator; |
| Inventory | GRANT SELECT, INSERT, UPDATE, DELETE ON Inventory TO rl\_aley\_administrator; |
| Contract | Select | GRANT SELECT ON Contract TO rl\_aley\_administrator; |

| Название роли | Название объекта | Функция | Скрипт |
| --- | --- | --- | --- |
| rl\_aley\_employee | Client\_Insert | Execute | GRANT EXECUTE ON Client\_Insert TO rl\_aley\_employee; |
| Client\_Update | GRANT EXECUTE ON Client\_Update TO rl\_aley\_employee; |
| Client\_Delete | GRANT EXECUTE ON Client\_Delete TO rl\_aley\_employee; |
| Contract\_Insert | GRANT EXECUTE ON Contract\_Insert TO rl\_aley\_employee; |
| Contract\_Update | GRANT EXECUTE ON Contract\_Update TO rl\_aley\_employee; |
| Contract\_Delete | GRANT EXECUTE ON Contract\_Delete TO rl\_aley\_employee; |
| Client\_Contract\_Insert | GRANT EXECUTE ON Client\_Contract\_Insert TO rl\_aley\_employee; |
| Client\_Contract\_Update | GRANT EXECUTE ON Client\_Contract\_Update TO rl\_aley\_employee; |
| Client\_Contract\_Delete | GRANT EXECUTE ON Client\_Contract\_Delete TO rl\_aley\_employee; |
| Inventory\_Contract\_Insert | GRANT EXECUTE ON Inventory\_Contract\_Insert TO rl\_aley\_employee; |
| Inventory\_Contract\_Update | GRANT EXECUTE ON Inventory\_Contract\_Update TO rl\_aley\_employee; |
| Inventory\_Contract\_Delete | GRANT EXECUTE ON Inventory\_Contract\_Delete TO rl\_aley\_employee; |
| Additional\_Client\_Contract\_Insert | GRANT EXECUTE ON Additional\_Client\_Contract\_Insert TO rl\_aley\_employee; |
| Additional\_Client\_Contract\_Update | GRANT EXECUTE ON Additional\_Client\_Contract\_Update TO rl\_aley\_employee; |
| Additional\_Client\_Contract\_Delete | GRANT EXECUTE ON Additional\_Client\_Contract\_Delete TO rl\_aley\_employee; |
| Additional\_Inventory\_Insert | GRANT EXECUTE ON Additional\_Inventory\_Insert TO rl\_aley\_employee; |
| Additional\_Inventory\_Update | GRANT EXECUTE ON Additional\_Inventory\_Update TO rl\_aley\_employee; |
| Additional\_Inventory\_Delete | GRANT EXECUTE ON Additional\_Inventory\_Delete TO rl\_aley\_employee; |
| Mark\_Model\_Inventory\_Insert | GRANT EXECUTE ON Mark\_Model\_Inventory\_Insert TO rl\_aley\_employee; |
| Mark\_Model\_Inventory\_Update | GRANT EXECUTE ON Mark\_Model\_Inventory\_Update TO rl\_aley\_employee; |
| Mark\_Model\_Inventory\_Delete | GRANT EXECUTE ON Mark\_Model\_Inventory\_Delete TO rl\_aley\_employee; |
| rl\_aley \_club\_administrator | Employee\_Insert | Execute | GRANT EXECUTE ON Employee\_Insert TO rl\_aley\_club\_administrator; |
| Employee\_Update | GRANT EXECUTE ON Employee\_Update TO rl\_aley\_club\_administrator; |
| Employee\_Delete | GRANT EXECUTE ON Employee\_Delete TO rl\_aley\_club\_administrator; |
| Map\_Insert | GRANT EXECUTE ON Map\_Insert TO rl\_aley\_club\_administrator; |
| Map\_Update | GRANT EXECUTE ON Map\_Update TO rl\_aley\_club\_administrator; |
| Map\_Delete | GRANT EXECUTE ON Map\_Delete TO rl\_aley\_club\_administrator; |
| Game\_Type\_Insert | GRANT EXECUTE ON Game\_Type\_Insert TO rl\_aley\_club\_administrator; |
| Game\_Type\_Update | GRANT EXECUTE ON Game\_Type\_Update TO rl\_aley\_club\_administrator; |
| Game\_Type\_Delete | GRANT EXECUTE ON Game\_Type\_Delete TO rl\_aley\_club\_administrator; |
| Inventory\_Insert | GRANT EXECUTE ON Inventory\_Insert TO rl\_aley\_club\_administrator; |
| Inventory\_Update | GRANT EXECUTE ON Inventory\_Update TO rl\_aley\_club\_administrator; |
| Inventory\_Delete | GRANT EXECUTE ON Inventory\_Delete TO rl\_aley\_club\_administrator; |
| Characteristic\_Insert | GRANT EXECUTE ON Characteristic\_Insert TO rl\_aley\_club\_administrator; |
| Characteristic\_Update | GRANT EXECUTE ON Characteristic\_Update TO rl\_aley\_club\_administrator; |
| Characteristic\_Delete | GRANT EXECUTE ON Characteristic\_Delete TO rl\_aley\_club\_administrator; |
| Contract\_Insert | GRANT EXECUTE ON Contract\_Insert TO rl\_aley\_club\_administrator; |
| Inventory\_Characteristic\_Insert | GRANT EXECUTE ON Inventory\_Characteristic\_Insert TO rl\_aley\_club\_administrator; |
| Inventory\_Characteristic\_Update | GRANT EXECUTE ON Inventory\_Characteristic\_Update TO rl\_aley\_club\_administrator; |
| Inventory\_Characteristic\_Delete | GRANT EXECUTE ON Inventory\_Characteristic\_Delete TO rl\_aley\_club\_administrator; |
| Player\_Type\_Insert | GRANT EXECUTE ON Player\_Type\_Insert TO rl\_aley\_club\_administrator; |
| Player\_Type\_Update | GRANT EXECUTE ON Player\_Type\_Update TO rl\_aley\_club\_administrator; |
| Player\_Type\_Delete | GRANT EXECUTE ON Player\_Type\_Delete TO rl\_aley\_club\_administrator; |
| Armor\_Type\_Insert | GRANT EXECUTE ON Armor\_Type\_Insert TO rl\_aley\_club\_administrator; |
| Armor\_Type\_Update | GRANT EXECUTE ON Armor\_Type\_Update TO rl\_aley\_club\_administrator; |
| Armor\_Type\_Delete | GRANT EXECUTE ON Armor\_Type\_Delete TO rl\_aley\_club\_administrator; |
| Mark\_Insert | GRANT EXECUTE ON Mark\_Insert TO rl\_aley\_club\_administrator; |
| Mark\_Update | GRANT EXECUTE ON Mark\_Update TO rl\_aley\_club\_administrator; |
| Mark\_Delete | GRANT EXECUTE ON Mark\_Delete TO rl\_aley\_club\_administrator; |
| Model\_Insert | GRANT EXECUTE ON Model\_Insert TO rl\_aley\_club\_administrator; |
| Model\_Update | GRANT EXECUTE ON Model\_Update TO rl\_aley\_club\_administrator; |
| Model\_Delete | GRANT EXECUTE ON Model\_Delete TO rl\_aley\_club\_administrator; |
| Mark\_Model\_Inventory\_Insert | GRANT EXECUTE ON Mark\_Model\_Inventory\_Insert TO rl\_aley\_club\_administrator; |
| Mark\_Model\_Inventory\_Update | GRANT EXECUTE ON Mark\_Model\_Inventory\_Update TO rl\_aley\_club\_administrator; |
| Mark\_Model\_Inventory\_Delete | GRANT EXECUTE ON Mark\_Model\_Inventory\_Delete TO rl\_aley\_club\_administrator; |
| rl\_aley\_customer | Client\_Insert | Execute | GRANT EXECUTE ON Client\_Insert TO rl\_aley\_customer; |
| Client\_Update | GRANT EXECUTE ON Client\_Update TO rl\_aley\_customer; |
| Client\_Delete | GRANT EXECUTE ON Client\_Delete TO rl\_aley\_customer; |
| Contract\_Insert | GRANT EXECUTE ON Contract\_Insert TO rl\_aley\_customer; |
| Contract\_Update | GRANT EXECUTE ON Contract\_Update TO rl\_aley\_customer; |
| Contract\_Delete | GRANT EXECUTE ON Contract\_Delete TO rl\_aley\_customer; |
| Inventory\_Contract\_Insert | GRANT EXECUTE ON Inventory\_Contract\_Insert TO rl\_aley\_customer; |
| Inventory\_Contract\_Update | GRANT EXECUTE ON Inventory\_Contract\_Update TO rl\_aley\_customer; |
| Inventory\_Contract\_Delete | GRANT EXECUTE ON Inventory\_Contract\_Delete TO rl\_aley\_customer; |
| Additional\_Client\_Contract\_Insert | GRANT EXECUTE ON Additional\_Client\_Contract\_Insert TO rl\_aley\_customer; |
| Additional\_Client\_Contract\_Update | GRANT EXECUTE ON Additional\_Client\_Contract\_Update TO rl\_aley\_customer; |
| Additional\_Client\_Contract\_Delete | GRANT EXECUTE ON Additional\_Client\_Contract\_Delete TO rl\_aley\_customer; |
| Additional\_Inventory\_Insert | GRANT EXECUTE ON Additional\_Inventory\_Insert TO rl\_aley\_customer; |
| Additional\_Inventory\_Update | GRANT EXECUTE ON Additional\_Inventory\_Update TO rl\_aley\_customer; |
| Additional\_Inventory\_Delete | GRANT EXECUTE ON Additional\_Inventory\_Delete TO rl\_aley\_customer; |
| rl\_ aley\_administrator | Employee\_Insert | Execute | GRANT EXECUTE ON Employee\_Insert TO rl\_aley\_administrator; |
| Employee\_Update | GRANT EXECUTE ON Employee\_Update TO rl\_aley\_administrator; |
| Employee\_Delete | GRANT EXECUTE ON Employee\_Delete TO rl\_aley\_administrator; |
| Client\_Insert | GRANT EXECUTE ON Client\_Insert TO rl\_aley\_administrator; |
| Client\_Update | GRANT EXECUTE ON Client\_Update TO rl\_aley\_administrator; |
| Client\_Delete | GRANT EXECUTE ON Client\_Delete TO rl\_aley\_administrator; |
| Map\_Insert | GRANT EXECUTE ON Map\_Insert TO rl\_aley\_administrator; |
| Map\_Update | GRANT EXECUTE ON Map\_Update TO rl\_aley\_administrator; |
| Map\_Delete | GRANT EXECUTE ON Map\_Delete TO rl\_aley\_administrator; |
| Game\_Type\_Insert | GRANT EXECUTE ON Game\_Type\_Insert TO rl\_aley\_administrator; |
| Game\_Type\_Update | GRANT EXECUTE ON Game\_Type\_Update TO rl\_aley\_administrator; |
| Game\_Type\_Delete | GRANT EXECUTE ON Game\_Type\_Delete TO rl\_aley\_administrator; |
| Inventory\_Insert | GRANT EXECUTE ON Inventory\_Insert TO rl\_aley\_administrator; |
| Inventory\_Update | GRANT EXECUTE ON Inventory\_Update TO rl\_aley\_administrator; |
| Inventory\_Delete | GRANT EXECUTE ON Inventory\_Delete TO rl\_aley\_administrator; |
| Characteristic\_Insert | GRANT EXECUTE ON Characteristic\_Insert TO rl\_aley\_administrator; |
| Characteristic\_Update | GRANT EXECUTE ON Characteristic\_Update TO rl\_aley\_administrator; |
| Characteristic\_Delete | GRANT EXECUTE ON Characteristic\_Delete TO rl\_aley\_administrator; |
| Player\_Type\_Insert | GRANT EXECUTE ON Player\_Type\_Insert TO rl\_aley\_administrator; |
| Player\_Type\_Update | GRANT EXECUTE ON Player\_Type\_Update TO rl\_aley\_administrator; |
| Player\_Type\_Delete | GRANT EXECUTE ON Player\_Type\_Delete TO rl\_aley\_administrator; |
| Armor\_Type\_Insert | GRANT EXECUTE ON Armor\_Type\_Insert TO rl\_aley\_administrator; |
| Armor\_Type\_Update | GRANT EXECUTE ON Armor\_Type\_Update TO rl\_aley\_administrator; |
| Armor\_Type\_Delete | GRANT EXECUTE ON Armor\_Type\_Delete TO rl\_aley\_administrator; |
| Mark\_Insert | GRANT EXECUTE ON Mark\_Insert TO rl\_aley\_administrator; |
| Mark\_Update | GRANT EXECUTE ON Mark\_Update TO rl\_aley\_administrator; |
| Mark\_Delete | GRANT EXECUTE ON Mark\_Delete TO rl\_aley\_administrator; |
| Model\_Insert | GRANT EXECUTE ON Model\_Insert TO rl\_aley\_administrator; |
| Model\_Update | GRANT EXECUTE ON Model\_Update TO rl\_aley\_administrator; |
| Model\_Delete | GRANT EXECUTE ON Model\_Delete TO rl\_aley\_administrator; |
| Mark\_Model\_Inventory\_Insert | GRANT EXECUTE ON Mark\_Model\_Inventory\_Insert TO rl\_aley\_administrator; |
| Mark\_Model\_Inventory\_Update | GRANT EXECUTE ON Mark\_Model\_Inventory\_Update TO rl\_aley\_administrator; |
| Mark\_Model\_Inventory\_Delete | GRANT EXECUTE ON Mark\_Model\_Inventory\_Delete TO rl\_aley\_administrator; |

1. Протестировать разграничение прав доступа к объектам, на уровне ролей отличным от sa (1-а роль – 2-е ситуации: есть доступ к объекту, нет доступа к объекту).

| Роль | Объект – Есть право | Объект – Ограничены права |
| --- | --- | --- |
| Сотрудник | Скрипт | Скрипт |
| SELECT \* FROM Employee; | DELETE FROM Employee WHERE ID\_Employee = 1; |
| Результат | Результат |
|  |  |
| Клиент | Скрипт | Скрипт |
| SELECT \* FROM Game\_Type; | SELECT \* FROM [dbo].[Model]; |
| Результат | Результат |
|  |  |
| Заказчик | Скрипт | Скрипт |
| SELECT \* FROM Contract; | DELETE FROM Employee WHERE ID\_Employee = 1; |
| Результат | Результат |
|  |  |
| Администратор клуба | Скрипт | Скрипт |
| UPDATE Map SET Description\_Map = 'Updated Description' WHERE ID\_Map = 1; | DELETE FROM Inventory\_Contract WHERE ID\_Inventory\_Contract = 1; |
| Результат | Результат |
|  |  |
| Администратор | Скрипт | Скрипт |
| SELECT \* FROM Employee; | SELECT \* FROM Inventory\_Characteristic; |
| Результат | Результат |
|  |  |