

# **SQL SERVER ASSIGNMENTS**

The below database describes the business information of an ISP provider (ABCNET). The company offers different internet packs for different sectors. Use the sample data in appendix to populate the database tables.

1. Write the SQL script for creating the below database

pack_grades	
grade_id	
grade_name	
min_price	
max_price	

packages	
pack_id	
speed	
strt_date	
monthly_payment	
sector_id	

sec\_id\_fk

sectors	
sector_id	
sector_name	

2. Write the SQL script to modify the above table to include the *customers* table as indicated in below diagram.

pack_grades	
grade_id	
grade_name	
min_price	
max_price	

packages	
pack_id	
speed	
strt_date	
monthly_payment	
sector_id	

sec\_id\_fk

sectors	
sector_id	
sector_name	

customers	
Customer_Id	
First_Name	
Last_Name	
Birth_Date	
Join_Date	
City	
State	
Street	
main_phone_num	
secondary_phone_num	
fax	
monthly_discount	
pack_id	

pack\_id\_fk

3. Create a query to display all the data from the *Customers* table.
4. Create a query to display the internet package number, internet speed and monthly payment (*Packages* table).
5. Create a query to display the customer number, first name, last name, primary phone number, secondary phone number and package number (*Customers* table).
6. Create a query to display first name, last name, join date, monthly discount, monthly discount after an addition of 20% and monthly discount after a reduction of 20% (*Customers* table).
7. Create a query to display the package number, speed, strt\_date (the date when the package became available), monthly payment, and monthly payment \* 12, name the last column "YearlyPayment" (*Packages* table).
8. Create a query to display the last name concatenated with the first name, separated by space, and main phone number concatenated with secondary phone number, separated by comma and space. Name the column heading FULL\_NAME and CONTACT\_DETAILS respectively. (*Customers* table)
9. Create a query to display unique cities from the *Customers* table.
10. Create a query to display unique states from the *Customers* table.
11. Create a query to display unique combination of cities and states from *Customers* table.
12. Create a query to display the last name concatenated with the state, separated by space. Name this column CUSTOMER\_AND\_STATE (*Customers* table)
13. Create a query to display the first name, last name, monthly discount and city concatenated with street, separated by space. Name the column headings: FN, LN, DC and FULL\_ADDRESS respectively (*Customers* table).
14. Create a query to display unique monthly discounts in *Customers* table.
15. Create a query to display unique packages (package\_id) in *Customers* table.
16. Display the first name, last name, and package number for all customers whose last name is "King" (*Customers* table).
17. Display all the data from *Packages* table for packages whose speed is "5Mbps".
18. Display the first name, last name, package number and monthly discount for all customers with monthly discount less than 30 (*Customers* table).
19. Display all the data from *Customers* table for all customers who joined the company before January 1st, 2007.
20. Display the customer number, first name, state, city and package number for all customers whose package number equals 21, 28, or 14 (*Customers* table).
21. Display the customer number, first name, state, city and package number for all customers whose package number is not equal to 27, 10, or 3 (*Customers* table).
22. Display the last name, main phone number, monthly discount and package number for all customers whose customer number equals 703, 314 or 560 (*Customers* table).
23. Display the first name and monthly discount for all customers whose first name ends with an e (*Customers* table).
24. Display the last name and package number for all customers where the second letter of their last name is d (*Customers* table).

25. Display all the data from Customers table for all customers who have the letters: l, j or h in their last name. Order the query in descending order by monthly discount (Customers table).
26. Display the first name, join date, monthly discount and package number for all customers who don't have the letter a in their last name. Order the query in ascending order by package number (Customers table).
27. Display all data from Customers table for all customers without a package (package number is null)
28. Display the first name concatenated with the last name (separated by space), and monthly discount for all customers whose monthly discount is not in the range between 20 and 30. Order the query in ascending order by the full name (Customers table).
29. Display the first name concatenated with the last name (separated by space), the main phone number concatenated with street (separated by space), and monthly discount for all customers whose monthly discount is in the range between 11 and 27. Name the column headings FULL\_NAME, CONTACTS, and DC respectively (Customers table).
30. Display all data from Customers table for :
  - a. All customers who live in New York and whose monthly discount is in the range between 30 and 40 or
  - b. All customers whose package number is not 8,19, or 30 and whose join date is before January 1st, 2007
31. Display the last name, package number, and birthdate for all customers whose join date is in the range between December 12th, 2007 and April 17th, 2010 (Customers table).
32. Display the package number, start date, and speed for all packages whose start date is before January 1st, 2007 (Packages table)
33. Display the package number, speed, and sector number for all packages whose sector number equals 1 (Packages table).
34. Display the package number, speed and sector number for all packages with internet speed of "5Mbps" or "10Mbps" (Packages table).
35. Display the last name and monthly discount for all customers live in Orlando (Customers table).
36. Display the last name and package number for all customers whose package number equals 9 or 18. Perform the exercise once using IN operator, once using OR (Customers table).
37. Display the first name, main phone number and secondary phone number for all customers without a secondary phone number (secondary phone number is null).
38. Display the first name, monthly discount and package id for all customers without any monthly discount (monthly discount is null).
39. Display the customer number, first name in lowercase and last name in uppercase for all customers whose customer number is in the range of 80 and 150.
40. Generating Email Addresses
  - a. For all customers – display the last name, first name and email address. The email address will be composed from the first letter of first name

- concatenated with three first letters of last name concatenated with the string "@mymail.com" (For example : Ram Kedem → RKED@mymail.com).
- b. For all customers – display the last name, first name and email address. The email address will be composed from the first letter of first name concatenated with three last letters of last name concatenated with the string "@mymail.com" (For example : Ram Kedem → RDEM@mymail.com).
41. Display the last name and the length of the last name for all customers where last name's length is greater than 9 characters.
42. Phone Numbers :
- a. Display the first name, last name, main phone number and a new phone number using the REPLACE function. In the new phone number replace all occurrences of "515" with "\$\$\$".
  - b. Display the first name, last name, main phone number and new phone number using the REPLACE function. In the new phone number replace all prefixes of "515" with "\$\$\$" (only if the first 3 digits of the phone number contains the digits "515" replace those digits with "\$\$\$").
43. From *customers* table, for all customers, display :
- a. first name.
  - b. monthly discount.
  - c. monthly discount after addition of 19.7%.
  - d. monthly discount after addition of 19.7%, expressed as a whole number (ROUND).
  - e. monthly discount after addition of 19.7%, round down to the nearest whole number (FLOOR).
  - f. monthly discount after addition of 19.7%, round up to the nearest whole number (CEILING).
44. From *Customers* table, for all customers, display the first name, join date, join date minus 10 days, join date plus one month and the date difference between join date and current date.
45. Display the first name, birthdate and age for all customers whose older than 50.
46. Display all the data from *Customers* table, for all customers whose birthdate is today.
47. Display the first name, join date and the difference in years between join date and current date for all customers where today have passed exactly 5 years since they joined the company.
48. Display the first name concatenated with the join date, and last name concatenated with the monthly discount, for all customers. Solve this exercise using CAST.
49. From *Customers* table, for all customers whose last name starts with a *d* or *k*, display:
- a. last name
  - b. state in uppercase concatenated with customer number
  - c. join date concatenated with birthdate
- Solve this exercise using CONVERT, and in the WHERE clause instead of using LIKE, try to define the filtering condition using SUBSTRING.
50. Phone numbers report:
- a. Display the first name, last name, birth date, main phone number and secondary phone number for all customers whose package number equals 27.

- Replace every null value in main phone number or in secondary phone number with 'N/A'.
- b. Display the first name, last name, birth date, main phone number, secondary phone number for all customers who was born on 1972. Replace every null value in main phone number or in secondary phone number with 'N/A'.
51. From *Customers* table, for all customers, display the first name, last name, monthly discount and a discount grade based on these conditions :
- a. If the discount is between 0 and 10 – discount grade level is A.
  - b. If the discount is between 11 and 20 – discount grade level is B.
  - c. If the discount is between 21 and 30 – discount grade level is C.
  - d. for any other value – discount grade level is D.
52. Display the lowest last name alphabetically (*Customers* table).
53. Display the average monthly payment (*Packages* table).
54. Display the highest last name alphabetically (*Customers* table).
55. Display the number of internet packages (*Packages* table).
56. Display the number of records in *Customers* table.
57. Display the number of distinct states (*Customers* table).
58. Display the number of distinct internet speeds (*Packages* table).
59. Display the number of values (exclude Nulls) in Fax column (*Customers* table).
60. Display the number of Null values in Fax column (*Customers* table).
61. Display the highest, lowest and average monthly discount (*Customers* table).
62. Display the state and the number of customers for each state (*Customers* table).
63. Display the internet speed and the average monthly payment for each speed (*Packages* table).
64. Display the state and the number of distinct cities for each state (*Customers* table).
65. Display the sector number and the highest monthly payment for each sector (*Packages* table).
66. Package number and average monthly discount (*Customers* table) –
- a. Display the package number and the average monthly discount for each package.
  - b. Display the package number and the average monthly discount for each package, only for packages whose number equals 22 or 13.
67. Display the highest, lowest and average monthly payment for each internet speed (*Packages* table).
68. The number of customer in each internet package (*Customers* table) –
- a. Display the package number and the number of customers for each package number.
  - b. Modify the query to display the package number and number of customers for each package number, only for the customers whose monthly discount is greater than 20.
  - c. Modify the query to display the package number and number of customers for each package number, only for the packages with more than 100 customers.
69. Display the state, city and number of customers for each state and city.
70. Cities and the average monthly discount (*Customers* table) –
- a. Display the city and the average monthly discount for each city

- b. Display the city and the average monthly discount for each city, only for the customers whose monthly discount is greater than 20
- 71. States and the lowest monthly discount (*Customers* table) –
  - a. Display the state and the lowest monthly discount for each state.
  - b. Display the state and lowest monthly discount for each state, only for states where the lowest monthly discount is greater than 10
- 72. Display the internet speed and number of package for each internet speed, only for the internet speeds with more than 8 packages.
- 73. Customers and internet packages (*Customers* & *Packages* tables) –
  - a. Write a query to display first name, last name, package number and internet speed for all customers.
  - b. Write a query to display first name, last name, package number and internet speed for all customers whose package number equals 22 or 27. Order the query in ascending order by last name.
- 74. Internet packages and sectors –
  - a. Display the package number, internet speed, monthly payment and sector name for all packages (*Packages* and *Sectors* tables).
  - b. Display the customer name, package number, internet speed, monthly payment and sector name for all customers (*Customers*, *Packages* and *Sectors* tables).
  - c. Display the customer name, package number, internet speed, monthly payment and sector name for all customers in the business sector (*Customers*, *Packages* and *Sectors* tables).
- 75. Display the last name, first name, join date, package number, internet speed and sector name for all customers in the private sector who joined the company in the year 2006.
- 76. Display the package number, internet speed, monthly payment and package grade for all packages (*Packages* and *Pack\_Grades* tables).
- 77. Customers and internet packages (*Customers* and *Packages* tables)
  - a. Display the first name, last name, internet speed and monthly payment for all customers. Use INNER JOIN to solve this exercise.
  - b. Modify last query to display all customers, including those without any internet package.
  - c. Modify last query to display all packages, including those without any customers.
  - d. Modify last query to display all packages and all customers.
- 78. Display the last name, first name and package number for all customers who have the same package number as customer named 'Amado Taylor' (*Customers* table).
- 79. Display the last name, first name and monthly discount for all customers whose monthly discount is lower than the monthly discount of employee number 103 (*Customers* table).
- 80. Display the package number and internet speed for all packages whose internet speed is equal to the internet speed of package number 10 (*Packages* table).
- 81. Display the first name, last name, city and state for all customers who live in the same state as customer number 170 (*Customers* table).



82. Display the package number, internet speed and sector number for all packages whose sector number equals to the sector number of package number 10 (Packages table).
83. Display the first name, last name and join date for all customers who joined the company after customer number 540 (Customers table).
84. Display the first name, last name and join date for all customers who joined the company on the same month and on the same year as customer number 372 (Customers table).
85. Display the first name, last name, city, state and package number for all customers whose internet speed is "5Mbps" (Customers and Packages table).
86. Display the package number, internet speed and strt\_date (the date it became available) for all packages who became available on the same year as package number 7 (Packages table).
87. Display the first name, monthly discount, package number, main phone number and secondary phone number for all customers whose sector name is Business (Customers, Packages and Sectors tables).
88. Display the first name, monthly discount and package number for all customers whose monthly payment is greater than the average monthly payment (Customers and Packages table).
89. Display the first name, city, state, birthdate and monthly discount for all customers who was born on the same date as customer number 179, and whose monthly discount is greater than the monthly discount of customer number 107 (Customers table)
90. Display all the data from Packages table for packages whose internet speed equals to the internet speed of package number 30, and whose monthly payment is greater than the monthly payment of package number 7 (Packages table).
91. Display the package number, internet speed, and monthly payment for all packages whose monthly payment is greater than the maximum monthly payment of packages with internet speed equals to "5Mbps" (Packages table).
92. Display the package number, internet speed and monthly payment for all packages whose monthly payment is greater than the minimum monthly payment of packages with internet speed equals to "5Mbps" (Packages table).
93. Display the package number, internet speed and monthly payment for all packages whose monthly payment is lower than the minimum monthly payment of packages with internet speed equals to "5Mbps" (Packages table).
94. Display the first name, monthly discount and package number for all customers whose monthly discount is lower than the average monthly discount, and whose package number is the same as customer named "Kevin"



## Appendix: Sample data

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INSERT customers VALUES(1,'Alvin','Smith','1962-06-27',CAST(0x812D0B00 AS
Date),'NewYork','NewYork','5953HollisterAvenue','567.867.3945','936.228.9436','762.788
.3400',CAST(28.00 AS Decimal(4,2)),18)
INSERT customers VALUES(2,'Jose','Jones','1968-01-17',CAST(0x12300B00 AS
Date),'LosAngeles','California','4081HollisterAvenue','520.336.8373','939.115.6982','7
11.883.3345',CAST(12.00 AS Decimal(4,2)),31)
INSERT customers VALUES(3,'Amado','Taylor','1965-08-17',CAST(0x802C0B00 AS
Date),'Chicago','Illinois','3402BroderickStreet','522.501.6331','976.113.3737','767.94
4.7131',NULL,7)
INSERT customers VALUES(4,'Stuart','Williams','1983-05-01',CAST(0xF32E0B00 AS
Date),'Houston','Texas','5543JenningsStreet','530.339.4737','963.891.4185','756.186.36
34',CAST(17.00 AS Decimal(4,2)),23)
INSERT customers VALUES(5,'Demarcus','Brown','1971-12-02',CAST(0xD62C0B00 AS
Date),'Philadelphia','Pennsylvania','5321LagunaStreet','580.733.2184',NULL,'760.663.20
46',CAST(11.00 AS Decimal(4,2)),13)
INSERT customers VALUES(6,'Mark','Davies','1970-09-01',CAST(0xAB310B00 AS
Date),'Phoenix','Arizona','5868CameronWay','557.701.1366','919.345.5511',NULL,CAST(18.
00 AS Decimal(4,2)),39)
INSERT customers VALUES(7,'Merlin','Evans','1962-04-13',CAST(0xD52B0B00 AS
Date),'SanAntonio','Texas','8177BrannanStreet','542.753.9215','992.959.8999',NULL,CAST
(23.00 AS Decimal(4,2)),1)
INSERT customers VALUES(8,'Elroy','Wilson','1963-01-28',CAST(0x19330B00 AS
Date),'SanDiego','California','1873KeyAvenue','544.172.1347','985.345.8501',NULL,CAST(
6.00 AS Decimal(4,2)),42)
INSERT customers VALUES(9,'Charles','Thomas','1960-05-13',CAST(0x44320B00 AS
Date),'SanJose','California','9164ValenciaStreet','515.656.3047',NULL,'799.101.7626',C
AST(29.00 AS Decimal(4,2)),37)
INSERT customers VALUES(10,'Rudolph','Roberts','1973-11-05',CAST(0x412C0B00 AS
Date),'Jacksonville','Florida','6308GilbertStreet','549.569.1762','942.671.2496','729.
973.1742',CAST(7.00 AS Decimal(4,2)),7)
INSERT customers VALUES(11,'Laurence','Johnson','1975-11-25',CAST(0xC62F0B00 AS
Date),'Indianapolis','Indiana','7529McLarenAvenue','527.138.3311','916.219.9787',NULL,
CAST(9.00 AS Decimal(4,2)),34)
INSERT customers VALUES(12,'Pasquale','Lewis','1969-05-24',CAST(0x162F0B00 AS
Date),'Austin','Texas','1569ClevelandStreet','566.849.6722','983.706.4341',NULL,NULL,2
7)
INSERT customers VALUES(13,'Pat','Walker','1985-07-02',CAST(0x8D300B00 AS
Date),'SanFrancisco','California','4687SloatBoulevard','582.885.8362','938.219.8802',N
ULL,NULL,31)
INSERT customers VALUES(14,'Harland','Robinson','1974-04-17',CAST(0xFD2F0B00 AS
Date),'Columbus','Ohio','5390MontgomeryStreet','520.519.1795','944.392.2529','721.443.
8826',CAST(30.00 AS Decimal(4,2)),31)
INSERT customers VALUES(15,'Herschel','Wood','1974-07-24',CAST(0xE9320B00 AS
Date),'FortWorth','Texas','7842CorbettAvenue','588.826.5279','997.263.1636','779.791.4
617',CAST(30.00 AS Decimal(4,2)),41)
INSERT customers VALUES(16,'Galen','Thompson','1964-12-08',CAST(0x902B0B00 AS
Date),'Charlotte','NorthCarolina','5466FarragutAvenue','599.783.7133',NULL,'753.251.64
33',CAST(16.00 AS Decimal(4,2)),1)
INSERT customers VALUES(17,'Brain','White','1978-02-13',CAST(0x1F300B00 AS
Date),'Detroit','Michigan','3728IngersonStreet','561.654.2679','957.711.4041','794.811
.7354',NULL,34)
INSERT customers VALUES(18,'Marcel','Watson','1978-10-12',CAST(0x452E0B00 AS
Date),'ElPaso','Texas','9157LeidesdorffStreet','567.827.2421','937.806.4116','723.277.
6166',CAST(28.00 AS Decimal(4,2)),23)

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INSERT customers VALUES(19,'Lino','Jackson','1982-06-25',CAST(0x2E2E0B00 AS
Date),'Memphis','Tennessee','4542McKinnonAvenue','557.460.8507','984.433.8202','792.90
8.7024',CAST(6.00 AS Decimal(4,2)),27)
INSERT customers VALUES(20,'Riley','Wright','1970-02-18',CAST(0x2B2B0B00 AS
Date),'Boston','Massachusetts','4848VallejoStreet','541.661.3366','931.368.3046','737.
625.7424',CAST(21.00 AS Decimal(4,2)),1)
INSERT packages VALUES(1,'750Kbps',CAST(0x5C2C0B00 AS Date),79,1)
INSERT packages VALUES(2,'750Kbps',CAST(0x8D2D0B00 AS Date),69,1)
INSERT packages VALUES(3,'750Kbps',CAST(0x092E0B00 AS Date),59,1)
INSERT packages VALUES(4,'750Kbps',CAST(0x05300B00 AS Date),49,1)
INSERT packages VALUES(5,'750Kbps',CAST(0xF9310B00 AS Date),39,1)
INSERT packages VALUES(6,'750Kbps',CAST(0x51320B00 AS Date),29,1)
INSERT packages VALUES(7,'750Kbps',CAST(0xA42B0B00 AS Date),69,2)
INSERT packages VALUES(8,'750Kbps',CAST(0x7D2D0B00 AS Date),59,2)
INSERT packages VALUES(9,'750Kbps',CAST(0x342F0B00 AS Date),49,2)
INSERT packages VALUES(10,'750Kbps',CAST(0x9C300B00 AS Date),39,2)
INSERT packages VALUES(11,'750Kbps',CAST(0x29320B00 AS Date),29,2)
INSERT packages VALUES(12,'750Kbps',CAST(0x2C330B00 AS Date),19,2)
INSERT packages VALUES(13,'1.5Mbps',CAST(0xBD2C0B00 AS Date),89,1)
INSERT packages VALUES(14,'1.5Mbps',CAST(0xB52E0B00 AS Date),79,1)
INSERT packages VALUES(15,'1.5Mbps',CAST(0xA2300B00 AS Date),69,1)
INSERT packages VALUES(16,'1.5Mbps',CAST(0x8F310B00 AS Date),59,1)
INSERT packages VALUES(17,'1.5Mbps',CAST(0x76320B00 AS Date),49,1)
INSERT packages VALUES(18,'1.5Mbps',CAST(0x3B2D0B00 AS Date),79,2)
INSERT packages VALUES(19,'1.5Mbps',CAST(0x3C2E0B00 AS Date),69,2)
INSERT packages VALUES(20,'1.5Mbps',CAST(0xA02F0B00 AS Date),59,2)
INSERT packages VALUES(21,'1.5Mbps',CAST(0x4A310B00 AS Date),49,2)
INSERT packages VALUES(22,'1.5Mbps',CAST(0x5F320B00 AS Date),39,2)
INSERT packages VALUES(23,'2.5Mbps',CAST(0x0C2E0B00 AS Date),99,1)
INSERT packages VALUES(24,'2.5Mbps',CAST(0xD82F0B00 AS Date),89,1)
INSERT packages VALUES(25,'2.5Mbps',CAST(0xC6310B00 AS Date),79,1)
INSERT packages VALUES(26,'2.5Mbps',CAST(0x09330B00 AS Date),69,1)
INSERT packages VALUES(27,'2.5Mbps',CAST(0x8B2E0B00 AS Date),89,2)
INSERT packages VALUES(28,'2.5Mbps',CAST(0x7C2F0B00 AS Date),79,2)
INSERT packages VALUES(29,'2.5Mbps',CAST(0xEC300B00 AS Date),69,2)
INSERT packages VALUES(30,'2.5Mbps',CAST(0x66320B00 AS Date),59,2)
INSERT packages VALUES(31,'5Mbps',CAST(0x55300B00 AS Date),109,1)
INSERT packages VALUES(32,'5Mbps',CAST(0xF6300B00 AS Date),99,1)
INSERT packages VALUES(33,'5Mbps',CAST(0xDF320B00 AS Date),89,1)
INSERT packages VALUES(34,'5Mbps',CAST(0xD1300B00 AS Date),99,2)
INSERT packages VALUES(35,'5Mbps',CAST(0x24320B00 AS Date),89,2)
INSERT packages VALUES(36,'5Mbps',CAST(0x5D330B00 AS Date),79,2)
INSERT packages VALUES(37,'10Mbps',CAST(0xE8300B00 AS Date),119,1)
INSERT packages VALUES(38,'10Mbps',CAST(0xAF320B00 AS Date),109,1)
INSERT packages VALUES(39,'10Mbps',CAST(0x2A320B00 AS Date),109,2)
INSERT packages VALUES(40,'10Mbps',CAST(0x5C320B00 AS Date),99,2)
INSERT packages VALUES(41,'12Mbps',CAST(0xB2330B00 AS Date),129,1)
INSERT packages VALUES(42,'12Mbps','2005-11-03',119,2)
INSERT sectors VALUES(1,'Private')
INSERT sectors VALUES(2,'Business')
INSERT pack_grades VALUES (1, 'Very Low', 0, 10)
INSERT pack_grades VALUES (2, 'Low', 11, 20)
INSERT pack_grades VALUES (3, 'Medium', 21, 40)
INSERT pack_grades VALUES (4, 'High', 41, 80)
INSERT pack_grades VALUES (5, 'Very High', 81, 150)

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