**Big Data Analysis With Ibm Cloud Databases**

**Phase 3: Development Part 1**

In this part you will begin building your project.

Start building the big data analysis solution using IBM Cloud Databases.

Create an IBM Cloud account, choose the appropriate database service (e.g., Db2, MongoDB), and set up a database instance.

Develop queries or scripts to explore and analyze the selected dataset. Perform basic data cleaning and transformation as needed.

**Introduction:**

Big data analytics is the use of advanced analytic techniques against very large, diverse big data sets that include structured, semi-structured and unstructured data, from different sources, and in different sizes from terabytes to zettabytes.

**Database:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Customer id | total\_bill | tip | sex | smoker | day | time | size | Phone number |
| 88F7B33d2bcf9f5 | 16.99 | 1.01 | Female | No | Sun | Dinner | 2 | (971)643-6089x9160 |
| f90cD3E76f1A9b9 | 10.34 | 1.66 | Male | No | Sun | Dinner | 3 | +1-114-355-1841x78347 |
| DbeAb8CcdfeFC2c | 21.01 | 3.5 | Male | No | Sun | Dinner | 3 | 9.02E+09 |
| A31Bee3c201ef58 | 23.68 | 3.31 | Male | No | Sun | Dinner | 2 | +1-607-333-9911x59088 |
| 1bA7A3dc874da3c | 24.59 | 3.61 | Female | No | Sun | Dinner | 4 | 3.74E+09 |
| bfDD7CDEF5D865B | 25.29 | 4.71 | Male | No | Sun | Dinner | 4 | 001-314-829-5014x1792 |
| bE9EEf34cB72AF7 | 8.77 | 2 | Male | No | Sun | Dinner | 2 | (314)591-7413 |
| 2EFC6A4e77FaEaC | 26.88 | 3.12 | Male | No | Sun | Dinner | 4 | -7199 |
| baDcC4DeefD8dEB | 15.04 | 1.96 | Male | No | Sun | Dinner | 2 | 166-234-6882x7457 |
| 8e4FB470FE19bF0 | 14.78 | 3.23 | Male | No | Sun | Dinner | 2 | (389)824-3204x8287 |
| BF0BbA03C29Bb3b | 10.27 | 1.71 | Male | No | Sun | Dinner | 2 | (285)029-1604x5466 |
| F738c69fB34E62E | 35.26 | 5 | Female | No | Sun | Dinner | 4 | (233)811-1749x417 |
| C03fDADdAadAdCe | 15.42 | 1.57 | Male | No | Sun | Dinner | 2 | (831)049-2030 |
| b759b74BD1dE80d | 18.43 | 3 | Male | No | Sun | Dinner | 4 | 7.79E+09 |
| 1F0B7D65A00DAF9 | 14.83 | 3.02 | Female | No | Sun | Dinner | 2 | 990-374-0521x33156 |
| 50Bb061cB30B461 | 21.58 | 3.92 | Male | No | Sun | Dinner | 2 | 2.53E+09 |
| D6dbA5308fEC4BC | 10.33 | 1.67 | Female | No | Sun | Dinner | 3 | 355-863-2311x6315 |
| 311D775990f066d | 16.29 | 3.71 | Male | No | Sun | Dinner | 3 | (566)667-8566x109 |
| 7F7E1BAcb0C9AFf | 16.97 | 3.5 | Female | No | Sun | Dinner | 3 | 4.74E+09 |
| 88473e15D5c3cD0 | 20.65 | 3.35 | Male | No | Sat | Dinner | 3 | 001-940-671-0693x345 |
| b31D271F8c200AB | 17.92 | 4.08 | Male | No | Sat | Dinner | 2 | 4.89E+09 |
| 42F4BdA841aBadC | 20.29 | 2.75 | Female | No | Sat | Dinner | 2 | 074-415-1149 |
| cBbBcA0FCA3C4Bc | 15.77 | 2.23 | Female | No | Sat | Dinner | 2 | 001-887-131-9735x6172 |
| f1f89173353aD90 | 39.42 | 7.58 | Male | No | Sat | Dinner | 4 | +1-166-565-3614x575 |
| c5B09fb33e8bA0A | 19.82 | 3.18 | Male | No | Sat | Dinner | 2 | +1-188-201-3028x13440 |
| c9F2282C40BEC1E | 17.81 | 2.34 | Male | No | Sat | Dinner | 4 | 903.237.1120x705 |
| 9c1bc7EC53Fb7cE | 13.37 | 2 | Male | No | Sat | Dinner | 2 | -8222 |
| ddEc50e2A2e3a2B | 12.69 | 2 | Male | No | Sat | Dinner | 2 | 645.665.5931 |
| 66F096D36Ebae11 | 21.7 | 4.3 | Male | No | Sat | Dinner | 2 | (672)634-3364 |
| F0fE2faAd78F8b5 | 19.65 | 3 | Female | No | Sat | Dinner | 2 | 507-684-0331 |
| 5d2feAfbdCAA6B5 | 9.55 | 1.45 | Male | No | Sat | Dinner | 2 | 719.072.3811x9483 |
| cDa5F303fCd6dEa | 18.35 | 2.5 | Male | No | Sat | Dinner | 4 | 138-424-2414x284 |
| 8Ef7DBfcaB02b6B | 15.06 | 3 | Female | No | Sat | Dinner | 2 | 625-325-5178 |
| 6Dec5b5542F8ed8 | 20.69 | 2.45 | Female | No | Sat | Dinner | 4 | 001-258-289-4822x430 |
| 3Fb8a7f68e12784 | 17.78 | 3.27 | Male | No | Sat | Dinner | 2 | 167.275.8072x1394 |
| 035eff50B9A0F24 | 24.06 | 3.6 | Male | No | Sat | Dinner | 3 | 001-718-046-2819x96662 |
| aa614aAE4B7Cf0C | 16.31 | 2 | Male | No | Sat | Dinner | 3 | 347.257.0051 |
| ACcde95AAe3e6cC | 16.93 | 3.07 | Female | No | Sat | Dinner | 3 | -2151 |
| b6a35de5CB6fc25 | 18.69 | 2.31 | Male | No | Sat | Dinner | 3 | (828)736-9849x305 |
| e92A191E345fA3A | 31.27 | 5 | Male | No | Sat | Dinner | 3 | 711-766-7143 |
| 7D0AcBF6CCac3fd | 16.04 | 2.24 | Male | No | Sat | Dinner | 3 | 571-027-5392x52373 |
| CEFA7BBCef013AE | 17.46 | 2.54 | Male | No | Sun | Dinner | 2 | -7510 |
| 9edBC94aE7cA22a | 13.94 | 3.06 | Male | No | Sun | Dinner | 2 | +1-194-730-3308x3435 |
| fFe7BAA737aDbe2 | 9.68 | 1.32 | Male | No | Sun | Dinner | 2 | (361)504-1387x66414 |
| 5F2f3fAca8B0946 | 30.4 | 5.6 | Male | No | Sun | Dinner | 4 | (633)617-1882x60906 |
| 6bFcfc3cc1BC6B4 | 18.29 | 3 | Male | No | Sun | Dinner | 2 | 049.991.7021x207 |
| f3BD2cBF7eEb6df | 22.23 | 5 | Male | No | Sun | Dinner | 2 | 540.583.5150x603 |
| Ee4eB129dC7913A | 32.4 | 6 | Male | No | Sun | Dinner | 4 | 001-824-105-7592x567 |
| dBCEf340C3657Eb | 28.55 | 2.05 | Male | No | Sun | Dinner | 3 | 423.672.3441x50759 |
| E47FB71DD9ACCd9 | 18.04 | 3 | Male | No | Sun | Dinner | 2 | 001-303-890-9476x293 |
| eA3fDd79BE9f0E7 | 12.54 | 2.5 | Male | No | Sun | Dinner | 2 | +1-162-385-4717x6173 |
| aF0eE4547Bc025c | 10.29 | 2.6 | Female | No | Sun | Dinner | 2 | 371.858.0099x78932 |
| 9F5DeD7aD228F5a | 34.81 | 5.2 | Female | No | Sun | Dinner | 4 | 048-503-7259x42036 |
| D3Fa0220dDE4d36 | 9.94 | 1.56 | Male | No | Sun | Dinner | 2 | 986-816-4078x799 |
| 60FdBFd5e7BE8fF | 25.56 | 4.34 | Male | No | Sun | Dinner | 4 | (964)775-9750x8072 |
| D8bF5Ab2b98caff | 19.49 | 3.51 | Male | No | Sun | Dinner | 2 | (245)876-7530 |
| CD8d33aA25bc8BB | 38.01 | 3 | Male | Yes | Sat | Dinner | 4 | 7.2E+09 |
| Fac3BfFf0A3d03c | 26.41 | 1.5 | Female | No | Sat | Dinner | 2 | 048-580-4571 |
| e552D7ddafe1FFb | 11.24 | 1.76 | Male | Yes | Sat | Dinner | 2 | 7.43E+09 |
| 0f8deedb629A5f6 | 48.27 | 6.73 | Male | No | Sat | Dinner | 4 | (840)054-8816x5656 |
| bB9e49E506F65ed | 20.29 | 3.21 | Male | Yes | Sat | Dinner | 2 | 366.024.6617 |
| Ed724605A403D91 | 13.81 | 2 | Male | Yes | Sat | Dinner | 2 | (236)336-4342 |
| 0aBE5ACb18E0c10 | 11.02 | 1.98 | Male | Yes | Sat | Dinner | 2 | +1-930-513-0910x410 |
| 5D2cb63CaAF53f6 | 18.29 | 3.76 | Male | Yes | Sat | Dinner | 4 | (000)637-3788 |
| Ee6974f90eeCe18 | 17.59 | 2.64 | Male | No | Sat | Dinner | 3 | 641-340-3192x7669 |
| cEf02C076afa07f | 20.08 | 3.15 | Male | No | Sat | Dinner | 3 | 150-528-7831x7206 |
| 9Df5Ba591bF3EFf | 16.45 | 2.47 | Female | No | Sat | Dinner | 2 | +1-824-030-3058x05214 |
| 3faB1CBfEFBDdD4 | 3.07 | 1 | Female | Yes | Sat | Dinner | 1 | 8.29E+09 |
| Ebcefdf75eCb0a9 | 20.23 | 2.01 | Male | No | Sat | Dinner | 2 | (949)941-9234x688 |
| e75e5DBfcb68887 | 15.01 | 2.09 | Male | Yes | Sat | Dinner | 2 | 001-821-485-1296x616 |
| 6a53a8D41dDF6de | 12.02 | 1.97 | Male | No | Sat | Dinner | 2 | (131)005-1695x59600 |
| F0d3bD1aaf9E3Bc | 17.07 | 3 | Female | No | Sat | Dinner | 3 | 802-325-6918x14023 |
| 5bC87340799FBD0 | 26.86 | 3.14 | Female | Yes | Sat | Dinner | 2 | 336-516-8781 |
| dBfA17Aaf16b4ab | 25.28 | 5 | Female | Yes | Sat | Dinner | 2 | 605-087-9260x2141 |
| c935b7Eb6FA0B0F | 14.73 | 2.2 | Female | No | Sat | Dinner | 2 | 119-877-9743 |
| b3e15e65Ca2CcBf | 10.51 | 1.25 | Male | No | Sat | Dinner | 2 | (094)992-1771 |
| dade3452F0c32FD | 17.92 | 3.08 | Male | Yes | Sat | Dinner | 2 | +1-654-882-5630x09244 |
| AdEd6cfD85DeC46 | 27.2 | 4 | Male | No | Thur | Lunch | 4 | 396-914-0284x0268 |
| DAf111987098ae4 | 22.76 | 3 | Male | No | Thur | Lunch | 2 | (224)570-4441x253 |
| 6e6a5b885F6496d | 17.29 | 2.71 | Male | No | Thur | Lunch | 2 | 247.600.2341x507 |
| 12DCb4ED8E01D5C | 19.44 | 3 | Male | Yes | Thur | Lunch | 2 | (282)903-7321x6391 |
| E1cB5cA8CA7CC0a | 16.66 | 3.4 | Male | No | Thur | Lunch | 2 | (045)206-0472x11401 |
| AedDfaE8Cf49F07 | 10.07 | 1.83 | Female | No | Thur | Lunch | 1 | 001-975-965-3302x123 |
| bff9853aFAeF772 | 32.68 | 5 | Male | Yes | Thur | Lunch | 2 | 7.14E+09 |
| E883773cA5219Be | 15.98 | 2.03 | Male | No | Thur | Lunch | 2 | 001-349-126-7106x99998 |
| CB19EafEbBfF9eC | 34.83 | 5.17 | Female | No | Thur | Lunch | 4 | 203.453.5503 |
| 5834700fbEd2771 | 13.03 | 2 | Male | No | Thur | Lunch | 2 | (919)466-0809 |
| 2b0Ab1Dc9E01D7E | 18.28 | 4 | Male | No | Thur | Lunch | 2 | 270.300.6557x96333 |
| 3f3a3D89ad042Dd | 24.71 | 5.85 | Male | No | Thur | Lunch | 2 | -7734 |
| 9425E2F38C408ef | 21.16 | 3 | Male | No | Thur | Lunch | 2 | 740-688-0252x09426 |
| F0aeC9c2759F3C6 | 28.97 | 3 | Male | Yes | Fri | Dinner | 2 | 729-234-4895x79641 |
| d6EA619A7C4aA95 | 22.49 | 3.5 | Male | No | Fri | Dinner | 2 | 438-852-6976x0102 |
| 2A33E7Cad1bb0F5 | 5.75 | 1 | Female | Yes | Fri | Dinner | 2 | -8898 |
| d181FFB7d3E68bb | 16.32 | 4.3 | Female | Yes | Fri | Dinner | 2 | -7769 |
| feaBf8dAE0C0d6F | 22.75 | 3.25 | Female | No | Fri | Dinner | 2 | 001-823-180-5753x827 |
| 5eFda7caAeB260E | 40.17 | 4.73 | Male | Yes | Fri | Dinner | 4 | +1-716-783-0545x34370 |
| CCbFce93d3720bE | 27.28 | 4 | Male | Yes | Fri | Dinner | 2 | 001-380-532-6030x84086 |
| 2fEc528aFAF0b69 | 12.03 | 1.5 | Male | Yes | Fri | Dinner | 2 | -3552 |
| Adc7ad9B6e4A1Fe | 21.01 | 3 | Male | Yes | Fri | Dinner | 2 | 863.352.0641 |
| b8D0aD3490FC7e1 | 12.46 | 1.5 | Male | No | Fri | Dinner | 2 | 385.794.7337x2956 |
| 788B528aE7ED6ED | 11.35 | 2.5 | Female | Yes | Fri | Dinner | 2 | 563-598-6133x440 |
| 75D6ce671EfBF2d | 15.38 | 3 | Female | Yes | Fri | Dinner | 2 | (764)418-6059x95216 |
| cC8fe86a98ddD4B | 44.3 | 2.5 | Female | Yes | Sat | Dinner | 3 | +1-793-496-0331x189 |
| 5CcdF4Dbaff82Fa | 22.42 | 3.48 | Female | Yes | Sat | Dinner | 2 | 586-769-5838x142 |
| 16b285dbE23D4e8 | 20.92 | 4.08 | Female | No | Sat | Dinner | 2 | +1-542-427-8727x654 |
| 3e1484bfd9ABCdd | 15.36 | 1.64 | Male | Yes | Sat | Dinner | 2 | (474)251-7880 |
| adEcc21FC45F4e5 | 20.49 | 4.06 | Male | Yes | Sat | Dinner | 2 | 001-449-486-0092x964 |
| 7bad0B85253b63b | 25.21 | 4.29 | Male | Yes | Sat | Dinner | 2 | -7453 |
| 697d416d35A5FdB | 18.24 | 3.76 | Male | No | Sat | Dinner | 2 | 9.28E+09 |
| 73cc11babBd1004 | 14.31 | 4 | Female | Yes | Sat | Dinner | 2 | 393-731-6803x1719 |
| 85F9c0d6FEB8a7f | 14 | 3 | Male | No | Sat | Dinner | 2 | (033)666-3787 |
| 6e757BFf3BEe7ed | 7.25 | 1 | Female | No | Sat | Dinner | 1 | 001-482-422-9266x839 |
| 12E5fFa0C784F93 | 38.07 | 4 | Male | No | Sun | Dinner | 3 | 001-358-235-8603x90188 |
| A44f518fF27a5C7 | 23.95 | 2.55 | Male | No | Sun | Dinner | 2 | +1-391-732-0447x498 |
| b0BF93BB0b014f7 | 25.71 | 4 | Female | No | Sun | Dinner | 3 | 446-004-1699x5242 |
| 4Faea63c364bDBf | 17.31 | 3.5 | Female | No | Sun | Dinner | 2 | 803-839-7174 |
| C361fbCe5f7B27C | 29.93 | 5.07 | Male | No | Sun | Dinner | 4 | 844-198-4852 |
| 143BA14c1BECC32 | 10.65 | 1.5 | Female | No | Thur | Lunch | 2 | 062-380-7342x22273 |
| E8F6b0EaBFf0EfD | 12.43 | 1.8 | Female | No | Thur | Lunch | 2 | -10898 |
| 8cACCfeE15Bb2d1 | 24.08 | 2.92 | Female | No | Thur | Lunch | 4 | 224-373-1278x5935 |
| 84F1f4CE4aa768d | 11.69 | 2.31 | Male | No | Thur | Lunch | 2 | +1-596-805-7975x64715 |
| BcF890aB45AEC47 | 13.42 | 1.68 | Female | No | Thur | Lunch | 2 | 798-315-3232 |
| fB84EA36F639dda | 14.26 | 2.5 | Male | No | Thur | Lunch | 2 | 480.888.2872 |
| A3dd90E2646d8f5 | 15.95 | 2 | Male | No | Thur | Lunch | 2 | 495.962.3345 |
| 263B33c75735b8b | 12.48 | 2.52 | Female | No | Thur | Lunch | 2 | 833-886-9270x1773 |
| fB1954Ba6DCBa55 | 29.8 | 4.2 | Female | No | Thur | Lunch | 6 | (411)337-9523 |
| 8737D3acc74D05C | 8.52 | 1.48 | Male | No | Thur | Lunch | 2 | 275.784.4598x47289 |
| E3CAaA6e1baCbca | 14.52 | 2 | Female | No | Thur | Lunch | 2 | +1-478-796-8374x94970 |
| fAbdac3Ac999CC5 | 11.38 | 2 | Female | No | Thur | Lunch | 2 | 527-726-5973x662 |
| 360Fe0A37130Fb4 | 22.82 | 2.18 | Male | No | Thur | Lunch | 3 | 528.343.4317 |
| 2AEe01e97B87E33 | 19.08 | 1.5 | Male | No | Thur | Lunch | 2 | -1073 |
| e8C84fD0Ce25De4 | 20.27 | 2.83 | Female | No | Thur | Lunch | 2 | 001-556-291-6791x1647 |
| CD6F9f41ccDde73 | 11.17 | 1.5 | Female | No | Thur | Lunch | 2 | 540-369-4566x2227 |
| 6c0F6984eE61D5E | 12.26 | 2 | Female | No | Thur | Lunch | 2 | -8389 |
| 68F246aaefeBcFB | 18.26 | 3.25 | Female | No | Thur | Lunch | 2 | 071-248-9313x428 |
| DE7A1957fe00A28 | 8.51 | 1.25 | Female | No | Thur | Lunch | 2 | (807)306-4450x93158 |
| ECE95bFA0ee4ff5 | 10.33 | 2 | Female | No | Thur | Lunch | 2 | 982-260-9606 |
| 07daAF4057Ad2Aa | 14.15 | 2 | Female | No | Thur | Lunch | 2 | +1-847-177-7845x0821 |
| 905F457fAb70af7 | 16 | 2 | Male | Yes | Thur | Lunch | 2 | +1-915-490-6011x5420 |
| F8db60EEBd4eD7C | 13.16 | 2.75 | Female | No | Thur | Lunch | 2 | +1-581-157-8322x01891 |
| Fa6248dec743e87 | 17.47 | 3.5 | Female | No | Thur | Lunch | 2 | -4557 |
| Acf51b0ad0A77C4 | 34.3 | 6.7 | Male | No | Thur | Lunch | 6 | 105-145-9479 |
| 9F80AbE6EcAbFD4 | 41.19 | 5 | Male | No | Thur | Lunch | 5 | (995)155-3124 |
| 5033b29edA0a31c | 27.05 | 5 | Female | No | Thur | Lunch | 6 | 920-486-2672x58075 |
| 5Ff30b73Cef1E76 | 16.43 | 2.3 | Female | No | Thur | Lunch | 2 | 001-321-194-0056x433 |
| 4E06B9f9a15aCDC | 8.35 | 1.5 | Female | No | Thur | Lunch | 2 | (135)381-5257x34881 |
| Ad55E5311AECEB0 | 18.64 | 1.36 | Female | No | Thur | Lunch | 3 | 643.411.5921x92685 |
| 83c0ACB007e9D80 | 11.87 | 1.63 | Female | No | Thur | Lunch | 2 | -2272 |
| f8fC46DB41dA50A | 9.78 | 1.73 | Male | No | Thur | Lunch | 2 | 001-181-887-5635 |
| EEd08890CB4eB3f | 7.51 | 2 | Male | No | Thur | Lunch | 2 | +1-537-771-1019x46695 |
| 906Ecdd68a9b6CC | 14.07 | 2.5 | Male | No | Sun | Dinner | 2 | +1-079-947-0622x216 |
| eF3f68f7025FC51 | 13.13 | 2 | Male | No | Sun | Dinner | 2 | 001-083-972-3746x5098 |
| daE25db23B1eEAD | 17.26 | 2.74 | Male | No | Sun | Dinner | 3 | 001-951-755-5717x60001 |
| 5EcEAD19Cb376F2 | 24.55 | 2 | Male | No | Sun | Dinner | 4 | (722)827-2092x3244 |
| 6F4Eb34c3CAcD29 | 19.77 | 2 | Male | No | Sun | Dinner | 4 | (185)304-1686x938 |
| Bda3f10C72EdcC8 | 29.85 | 5.14 | Female | No | Sun | Dinner | 5 | (807)143-9174x633 |
| 6ab2E7D1739BaDd | 48.17 | 5 | Male | No | Sun | Dinner | 6 | 517.440.6043x017 |
| 7aa9A8e7d6b2d2a | 25 | 3.75 | Female | No | Sun | Dinner | 4 | (877)077-7190 |
| 01aDE411b4b30C0 | 13.39 | 2.61 | Female | No | Sun | Dinner | 2 | 114.464.6524x92878 |
| f67c06f8dECD1D3 | 16.49 | 2 | Male | No | Sun | Dinner | 4 | 893.355.7289 |
| 5BBDA96cd137246 | 21.5 | 3.5 | Male | No | Sun | Dinner | 4 | 977-555-6372x3075 |
| 00B10Cfe479aC3F | 12.66 | 2.5 | Male | No | Sun | Dinner | 2 | 001-245-207-9096x1725 |
| ee025dfaC3EFb0F | 16.21 | 2 | Female | No | Sun | Dinner | 3 | 338-743-7634x511 |
| cCe8bFd14f2BFa0 | 13.81 | 2 | Male | No | Sun | Dinner | 2 | 892-928-8849x566 |
| Ffe6b70DFA7f03c | 17.51 | 3 | Female | Yes | Sun | Dinner | 2 | -10039 |
| ab215e68EACD0F9 | 24.52 | 3.48 | Male | No | Sun | Dinner | 3 | +1-178-905-1173x52630 |
| 2Adc9EBdA3cBcf7 | 20.76 | 2.24 | Male | No | Sun | Dinner | 2 | 7.63E+09 |
| f7F04ec2cD24257 | 31.71 | 4.5 | Male | No | Sun | Dinner | 4 | +1-485-703-2439x193 |
| f1EF2a5e9c4d9D7 | 10.59 | 1.61 | Female | Yes | Sat | Dinner | 2 | 001-020-070-3547x551 |
| dD7743d7DBC94fE | 10.63 | 2 | Female | Yes | Sat | Dinner | 2 | 001-382-487-7202x231 |
| E0De5e4775789DE | 50.81 | 10 | Male | Yes | Sat | Dinner | 3 | 001-430-194-3454 |
| 8fCD2700722d99F | 15.81 | 3.16 | Male | Yes | Sat | Dinner | 2 | (299)470-3636x391 |
| 7C9fFf3167Eca8C | 7.25 | 5.15 | Male | Yes | Sun | Dinner | 2 | 001-429-498-8998x916 |
| f6BD6BD3B830a83 | 31.85 | 3.18 | Male | Yes | Sun | Dinner | 2 | +1-435-615-6643x41944 |
| B78aae8C92Def30 | 16.82 | 4 | Male | Yes | Sun | Dinner | 2 | 901-380-7695 |
| 5c798EaBfb4de9b | 32.9 | 3.11 | Male | Yes | Sun | Dinner | 2 | 6.21E+09 |
| cec177633F5bdf7 | 17.89 | 2 | Male | Yes | Sun | Dinner | 2 | 5.15E+09 |
| cBEd4EDbe33B48A | 14.48 | 2 | Male | Yes | Sun | Dinner | 2 | 538.535.3690 |
| F8dbeAdfA4D567C | 9.6 | 4 | Female | Yes | Sun | Dinner | 2 | 110.548.1763 |
| be03b46cAb5C264 | 34.63 | 3.55 | Male | Yes | Sun | Dinner | 2 | +1-998-549-9473x2223 |
| 494D609bcdf04B3 | 34.65 | 3.68 | Male | Yes | Sun | Dinner | 4 | (137)272-7471 |
| f2ea22C5cCd3D7a | 23.33 | 5.65 | Male | Yes | Sun | Dinner | 2 | 001-633-813-7765x11778 |
| f07d2667341b5B2 | 45.35 | 3.5 | Male | Yes | Sun | Dinner | 3 | 215-502-1838x0181 |
| a7369dBdfCae70F | 23.17 | 6.5 | Male | Yes | Sun | Dinner | 4 | 182.399.8387 |
| A6eAFe5dce01429 | 40.55 | 3 | Male | Yes | Sun | Dinner | 2 | 555.036.6415 |
| 7726cee9d7eecFd | 20.69 | 5 | Male | No | Sun | Dinner | 5 | (429)299-7189 |
| D1D6B2CfFFFfbed | 20.9 | 3.5 | Female | Yes | Sun | Dinner | 3 | 001-095-808-4212x6698 |
| E5e148FB71509e9 | 30.46 | 2 | Male | Yes | Sun | Dinner | 5 | 672.380.0939x79436 |
| Db5D39Be888BC6b | 18.15 | 3.5 | Female | Yes | Sun | Dinner | 3 | (272)590-6617 |
| 15045fea6ebafB4 | 23.1 | 4 | Male | Yes | Sun | Dinner | 3 | 349-283-9179 |
| 0bEFcc9755ac0bC | 15.69 | 1.5 | Male | Yes | Sun | Dinner | 2 | (270)337-4700x381 |
| F7f737E84BeFc7F | 19.81 | 4.19 | Female | Yes | Thur | Lunch | 2 | 001-762-305-6734x78708 |
| 8bDa1A527cae3bc | 28.44 | 2.56 | Male | Yes | Thur | Lunch | 2 | 001-845-779-3277x66303 |
| caf1E02780cc7Bd | 15.48 | 2.02 | Male | Yes | Thur | Lunch | 2 | 135.875.8322x4479 |
| eEb8321d0D36B9d | 16.58 | 4 | Male | Yes | Thur | Lunch | 2 | 586-855-7116 |
| F27ed8f681da5d9 | 7.56 | 1.44 | Male | No | Thur | Lunch | 2 | 6.37E+09 |
| fF1E63fbf5e8fBF | 10.34 | 2 | Male | Yes | Thur | Lunch | 2 | 6.47E+09 |
| dC6B2D49f4e9a36 | 43.11 | 5 | Female | Yes | Thur | Lunch | 4 | (257)125-0074x2167 |
| 0c70A677de78D7d | 13 | 2 | Female | Yes | Thur | Lunch | 2 | (709)271-0698x65625 |

**Queries:**

import numpy as np

import pandas as pd

from matplotlib import pyplot as plt

import seaborn as sns

import plotly.express as px

ds=pd.read\_csv("Customers-200.csv")

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds)

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds.head)

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds.shape)

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds.dtypes)

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds.isnull().sum())

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds.info())

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds['Customer id'].describe())

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

count\_Male=len(ds['sex'][ds['sex']=='Male'])

count\_Female=len(ds['sex'][ds['sex']=='Female'])

print("In the dataset, we have %d 'Males' and %d 'Females'"%(count\_Male,count\_Female))

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

print(ds.describe(include=['object','bool']))

print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")

**Output:**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Customer id total\_bill tip sex smoker day time size \

0 88F7B33d2bcf9f5 16.99 1.01 Female No Sun Dinner 2

1 f90cD3E76f1A9b9 10.34 1.66 Male No Sun Dinner 3

2 DbeAb8CcdfeFC2c 21.01 3.50 Male No Sun Dinner 3

3 A31Bee3c201ef58 23.68 3.31 Male No Sun Dinner 2

4 1bA7A3dc874da3c 24.59 3.61 Female No Sun Dinner 4

.. ... ... ... ... ... ... ... ...

194 eEb8321d0D36B9d 16.58 4.00 Male Yes Thur Lunch 2

195 F27ed8f681da5d9 7.56 1.44 Male No Thur Lunch 2

196 fF1E63fbf5e8fBF 10.34 2.00 Male Yes Thur Lunch 2

197 dC6B2D49f4e9a36 43.11 5.00 Female Yes Thur Lunch 4

198 0c70A677de78D7d 13.00 2.00 Female Yes Thur Lunch 2

Phone number

0 (971)643-6089x9160

1 +1-114-355-1841x78347

2 9017807728

3 +1-607-333-9911x59088

4 3739847538

.. ...

194 586-855-7116

195 6365503941

196 6469207288

197 (257)125-0074x2167

198 (709)271-0698x65625

[199 rows x 9 columns]

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

<bound method NDFrame.head of Customer id total\_bill tip sex smoker day time size \

0 88F7B33d2bcf9f5 16.99 1.01 Female No Sun Dinner 2

1 f90cD3E76f1A9b9 10.34 1.66 Male No Sun Dinner 3

2 DbeAb8CcdfeFC2c 21.01 3.50 Male No Sun Dinner 3

3 A31Bee3c201ef58 23.68 3.31 Male No Sun Dinner 2

4 1bA7A3dc874da3c 24.59 3.61 Female No Sun Dinner 4

.. ... ... ... ... ... ... ... ...

194 eEb8321d0D36B9d 16.58 4.00 Male Yes Thur Lunch 2

195 F27ed8f681da5d9 7.56 1.44 Male No Thur Lunch 2

196 fF1E63fbf5e8fBF 10.34 2.00 Male Yes Thur Lunch 2

197 dC6B2D49f4e9a36 43.11 5.00 Female Yes Thur Lunch 4

198 0c70A677de78D7d 13.00 2.00 Female Yes Thur Lunch 2

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4 3739847538

.. ...

194 586-855-7116

195 6365503941

196 6469207288

197 (257)125-0074x2167

198 (709)271-0698x65625

[199 rows x 9 columns]>

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

(199, 9)

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Customer id object

total\_bill float64

tip float64

sex object

smoker object

day object

time object

size int64

Phone number object

dtype: object

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Customer id 0

total\_bill 0

tip 0

sex 0

smoker 0

day 0

time 0

size 0

Phone number 0

dtype: int64

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

<class 'pandas.core.frame.DataFrame'>

RangeIndex: 199 entries, 0 to 198

Data columns (total 9 columns):

# Column Non-Null Count Dtype

--- ------ -------------- -----

0 Customer id 199 non-null object

1 total\_bill 199 non-null float64

2 tip 199 non-null float64

3 sex 199 non-null object

4 smoker 199 non-null object

5 day 199 non-null object

6 time 199 non-null object

7 size 199 non-null int64

8 Phone number 199 non-null object

dtypes: float64(2), int64(1), object(6)

memory usage: 14.1+ KB

None

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

count 199

unique 199

top 88F7B33d2bcf9f5

freq 1

Name: Customer id, dtype: object

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

In the dataset, we have 129 'Males' and 70 'Females'

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Customer id sex smoker day time Phone number

count 199 199 199 199 199 199

unique 199 2 2 4 2 199

top 88F7B33d2bcf9f5 Male No Sun Dinner (971)643-6089x9160

freq 1 129 140 76 145 1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*