Full name: Lesedi Kopeledi Matshehla

Completed qualifications: BSc Honours and BSc Degree in Mathematical Statistics at University of Pretoria.

Recent work experience: ALM Risk Reporting Operations at FirstRand Bank Limited.

Recruitment company: The Shard

Take Home Assessment: Credit Risk Classification Model and API.

1. Index

Index of german
02 Dec 1996 150 Index
17 Nov 1994 79793 german.data
17 Nov 1994 102000 german.data-numeric
17 Nov 1994 4679 german.doc

File origin
1252: Western European (Windows)

Windows - 1252, also known as CP-1252, is a character encoding standard that was used in Microsoft Windows to represent Western European languages. It was the default character set in Windows from 1985 to 1990.

First row of the loaded index file is used as header.

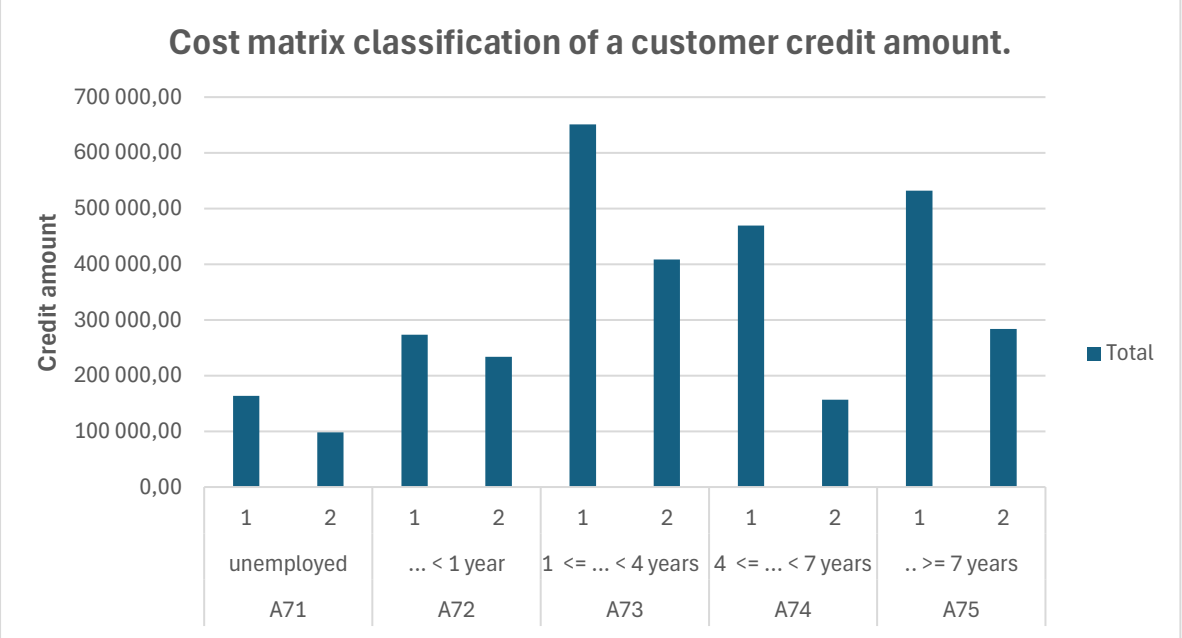
Power query applied steps:

```
let
    Source = Table.FromColumns({Lines.FromBinary(File.Contents("C:\Users\lesed\Downloads\statlog+german+credit+data\Index."), null, null, 1252)}),
    #"Promoted Headers" = Table.PromoteHeaders(Source, [PromoteAllScalars=true]),
    #"Changed Type" = Table.TransformColumnTypes(#"Promoted Headers",{{"Index of german", type text}})
in
    #"Changed Type"
```

2. German.data

A summary of a pivot table and clustered column shows that the customers with high amount of credit are classified as 1 = good cost matrix. While the customers with a smaller amount of credit are classified as 2 = bad cost matrix.

Employment status	Employment status description	Cost Matrix	Sum of Credit amount
A71	**unemployed**	1	163 520,00
A71	**unemployed**	2	97 919,00
A72	**... < 1 year**	1	273 721,00
A72	**... < 1 year**	2	234 101,00
A73	**1 <= ... < 4 years**	1	650 950,00
A73	**1 <= ... < 4 years**	2	408 522,00
A74	**4 <= ... < 7 years**	1	469 632,00
A74	**4 <= ... < 7 years**	2	157 063,00
A75	**.. >= 7 years**	1	531 997,00
A75	**.. >= 7 years**	2	283 833,00
Grand Total			**3 271 258,00**



Attribution names are used as headers to describe columns of the data table. The german-data table in excel file “German data edited” contain additional columns with a description of the qualitative values.

Power query applied steps:

```
let
    Source = Excel.Workbook(File.Contents("C:\Users\lesed\OneDrive\Desktop\The Shard\German data.xlsx"), null, true),
    german_Table = Source{[Item="german",Kind="Table"]}[Data],
```

```
    #"Changed Type" = Table.TransformColumnTypes(german_Table,{{"Checking account
status", type text}, {"Month", Int64.Type}, {"Credit history", type text}, {"Purpose", type text},
{"Credit amount", Int64.Type}, {"Savings account/bonds", type text}, {"Employment status",
type text}, {"Installment rate in % dispossable income", Int64.Type}, {"Personal status &
gender", type text}, {"Other debtors/guarantors", type text}, {"Present residence since",
Int64.Type}, {"Property", type text}, {"Age in years", Int64.Type}, {"Other installment plans",
type text}, {"Housing", type text}, {"Number of existing bank credits", Int64.Type}, {"Job", type
text}, {"Number of people being liable to provide maintenance for", Int64.Type}, {"Telephone",
type text}, {"Foreign worker", type text}, {"Cost Matrix", Int64.Type}}),
    #"Duplicated Column" = Table.DuplicateColumn(#"Changed Type", "Checking account
status", "Checking account status - Copy"),
    #"Reordered Columns" = Table.ReorderColumns(#"Duplicated Column",{"Checking
account status", "Checking account status - Copy", "Month", "Credit history", "Purpose",
"Credit amount", "Savings account/bonds", "Employment status", "Installment rate in %
dispossable income", "Personal status & gender", "Other debtors/guarantors", "Present
residence since", "Property", "Age in years", "Other installment plans", "Housing", "Number
of existing bank credits", "Job", "Number of people being liable to provide maintenance for",
"Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns" = Table.RenameColumns(#"Reordered Columns",{{"Checking
account status - Copy", "Account status description"}}),
    #"Replaced Value" = Table.ReplaceValue(#"Renamed Columns","A11","... <    0
DM",Replacer.ReplaceText,{"Account status description"}),
    #"Replaced Value1" = Table.ReplaceValue(#"Replaced Value","A12","0 <= ... <  200
DM",Replacer.ReplaceText,{"Account status description"}),
    #"Replaced Value2" = Table.ReplaceValue(#"Replaced Value1","A13","... >= 200 DM /
salary assignments for at least 1 year",Replacer.ReplaceText,{"Account status description"}),
    #"Replaced Value3" = Table.ReplaceValue(#"Replaced Value2","A14","no checking
account",Replacer.ReplaceText,{"Account status description"}),
    #"Duplicated Column1" = Table.DuplicateColumn(#"Replaced Value3", "Credit history",
"Credit history - Copy"),
    #"Reordered Columns1" = Table.ReorderColumns(#"Duplicated Column1",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history -
Copy", "Purpose", "Credit amount", "Savings account/bonds", "Employment status",
"Installment rate in % dispossable income", "Personal status & gender", "Other
debtors/guarantors", "Present residence since", "Property", "Age in years", "Other installment
plans", "Housing", "Number of existing bank credits", "Job", "Number of people being liable
to provide maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns1" = Table.RenameColumns(#"Reordered Columns1",{{"Credit
history - Copy", "Credit history description"}}),
    #"Replaced Value4" = Table.ReplaceValue(#"Renamed Columns1","A30","no credits
taken/ all credits paid back duly",Replacer.ReplaceText,{"Credit history description"}),
    #"Replaced Value5" = Table.ReplaceValue(#"Replaced Value4","A31","all credits at this
bank paid back duly",Replacer.ReplaceText,{"Credit history description"}),
    #"Replaced Value6" = Table.ReplaceValue(#"Replaced Value5","A32","existing credits
paid back duly till now",Replacer.ReplaceText,{"Credit history description"}),
    #"Replaced Value7" = Table.ReplaceValue(#"Replaced Value6","A33","delay in paying off
in the past",Replacer.ReplaceText,{"Credit history description"}),
```

```
    #"Replaced Value8" = Table.ReplaceValue(#"Replaced Value7","A34","critical account/
other credits existing (not at this bank)",Replacer.ReplaceText,{"Credit history description"}),
    #"Duplicated Column2" = Table.DuplicateColumn(#"Replaced Value8", "Purpose",
"Purpose - Copy"),
    #"Reordered Columns2" = Table.ReorderColumns(#"Duplicated Column2",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history
description", "Purpose", "Purpose - Copy", "Credit amount", "Savings account/bonds",
"Employment status", "Installment rate in % dispossable income", "Personal status &
gender", "Other debtors/guarantors", "Present residence since", "Property", "Age in years",
"Other installment plans", "Housing", "Number of existing bank credits", "Job", "Number of
people being liable to provide maintenance for", "Telephone", "Foreign worker", "Cost
Matrix"}),
    #"Renamed Columns2" = Table.RenameColumns(#"Reordered Columns2",{{"Purpose -
Copy", "Purpose description"}}),
    #"Replaced Value9" = Table.ReplaceValue(#"Renamed Columns2","A40","car
(new)",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value10" = Table.ReplaceValue(#"Replaced Value9","A41","car
(used)",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value11" = Table.ReplaceValue(#"Replaced
Value10","A42","furniture/equipment",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value12" = Table.ReplaceValue(#"Replaced
Value11","A43","radio/television",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value13" = Table.ReplaceValue(#"Replaced Value12","A44","domestic
appliances",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value14" = Table.ReplaceValue(#"Replaced
Value13","A45","repairs",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value15" = Table.ReplaceValue(#"Replaced
Value14","A46","education",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value16" = Table.ReplaceValue(#"Replaced Value15","A47","(vacation - does
not exist?)",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value17" = Table.ReplaceValue(#"Replaced
Value16","A48","retraining",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value18" = Table.ReplaceValue(#"Replaced
Value17","A49","business",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value19" = Table.ReplaceValue(#"Replaced
Value18","A410","others",Replacer.ReplaceText,{"Purpose description"}),
    #"Replaced Value20" = Table.ReplaceValue(#"Replaced Value19","car
(used)0","others",Replacer.ReplaceText,{"Purpose description"}),
    #"Duplicated Column3" = Table.DuplicateColumn(#"Replaced Value20", "Savings
account/bonds", "Savings account/bonds - Copy"),
    #"Reordered Columns3" = Table.ReorderColumns(#"Duplicated Column3",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history
description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds",
"Savings account/bonds - Copy", "Employment status", "Installment rate in % dispossable
income", "Personal status & gender", "Other debtors/guarantors", "Present residence since",
"Property", "Age in years", "Other installment plans", "Housing", "Number of existing bank
```

```
credits", "Job", "Number of people being liable to provide maintenance for", "Telephone",
"Foreign worker", "Cost Matrix"}),
    #"Renamed Columns3" = Table.RenameColumns(#"Reordered Columns3",{{"Savings
account/bonds - Copy", "Savings account/bonds description"}}),
    #"Replaced Value21" = Table.ReplaceValue(#"Renamed Columns3","A61","... <  100
DM",Replacer.ReplaceText,{"Savings account/bonds description"}),
    #"Replaced Value22" = Table.ReplaceValue(#"Replaced Value21","A62","100 <= ... <  500
DM",Replacer.ReplaceText,{"Savings account/bonds description"}),
    #"Replaced Value23" = Table.ReplaceValue(#"Replaced Value22","A63","500 <= ... <
1000 DM",Replacer.ReplaceText,{"Savings account/bonds description"}),
    #"Replaced Value24" = Table.ReplaceValue(#"Replaced Value23","A64",".. >= 1000
DM",Replacer.ReplaceText,{"Savings account/bonds description"}),
    #"Replaced Value25" = Table.ReplaceValue(#"Replaced Value24","A65","unknown/ no
savings account",Replacer.ReplaceText,{"Savings account/bonds description"}),
    #"Duplicated Column4" = Table.DuplicateColumn(#"Replaced Value25", "Employment
status", "Employment status - Copy"),
    #"Reordered Columns4" = Table.ReorderColumns(#"Duplicated Column4",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history
description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds",
"Savings account/bonds description", "Employment status", "Employment status - Copy",
"Installment rate in % dispossable income", "Personal status & gender", "Other
debtors/guarantors", "Present residence since", "Property", "Age in years", "Other installment
plans", "Housing", "Number of existing bank credits", "Job", "Number of people being liable
to provide maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns4" = Table.RenameColumns(#"Reordered Columns4",{{"Employment
status - Copy", "Employment status description"}}),
    #"Replaced Value26" = Table.ReplaceValue(#"Renamed
Columns4","A71","unemployed",Replacer.ReplaceText,{"Employment status"}),
    #"Replaced Value27" = Table.ReplaceValue(#"Replaced Value26","A72","... < 1
year",Replacer.ReplaceText,{"Employment status"}),
    #"Replaced Value28" = Table.ReplaceValue(#"Replaced Value27","A73","1  <= ... < 4
years  ",Replacer.ReplaceText,{"Employment status"}),
    #"Replaced Value29" = Table.ReplaceValue(#"Replaced Value28","A74","4  <= ... < 7
years",Replacer.ReplaceText,{"Employment status"}),
    #"Replaced Value30" = Table.ReplaceValue(#"Replaced Value29","A75",".. >= 7
years",Replacer.ReplaceText,{"Employment status"}),
    #"Renamed Columns5" = Table.RenameColumns(#"Replaced Value30",{{"Employment
status", "Employment statu"}, {"Employment status description", "Employment status"}}),
    #"Reordered Columns5" = Table.ReorderColumns(#"Renamed Columns5",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history
description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds",
"Savings account/bonds description", "Employment status", "Employment statu", "Installment
rate in % dispossable income", "Personal status & gender", "Other debtors/guarantors",
"Present residence since", "Property", "Age in years", "Other installment plans", "Housing",
"Number of existing bank credits", "Job", "Number of people being liable to provide
maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
```

```
    #"Renamed Columns6" = Table.RenameColumns(#"Reordered Columns5",{{"Employment statu", "Employment status description"}}),
    #"Duplicated Column5" = Table.DuplicateColumn(#"Renamed Columns6", "Personal status & gender", "Personal status & gender - Copy"),
    #"Reordered Columns6" = Table.ReorderColumns(#"Duplicated Column5",{"Checking account status", "Account status description", "Month", "Credit history", "Credit history description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds", "Savings account/bonds description", "Employment status", "Employment status description", "Installment rate in % dispossable income", "Personal status & gender", "Personal status & gender - Copy", "Other debtors/guarantors", "Present residence since", "Property", "Age in years", "Other installment plans", "Housing", "Number of existing bank credits", "Job", "Number of people being liable to provide maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns7" = Table.RenameColumns(#"Reordered Columns6",{{"Personal status & gender - Copy", "Personal status & gender description"}}),
    #"Replaced Value31" = Table.ReplaceValue(#"Renamed Columns7","A91","male   : divorced/separated",Replacer.ReplaceText,{"Personal status & gender description"}),
    #"Replaced Value32" = Table.ReplaceValue(#"Replaced Value31","A92","female : divorced/separated/married",Replacer.ReplaceText,{"Personal status & gender description"}),
    #"Replaced Value33" = Table.ReplaceValue(#"Replaced Value32","A93","male   : single",Replacer.ReplaceText,{"Personal status & gender description"}),
    #"Replaced Value34" = Table.ReplaceValue(#"Replaced Value33","A94","male   : married/widowed",Replacer.ReplaceText,{"Personal status & gender description"}),
    #"Replaced Value35" = Table.ReplaceValue(#"Replaced Value34","A95","female : single",Replacer.ReplaceText,{"Personal status & gender description"}),
    #"Duplicated Column6" = Table.DuplicateColumn(#"Replaced Value35", "Other debtors/guarantors", "Other debtors/guarantors - Copy"),
    #"Reordered Columns7" = Table.ReorderColumns(#"Duplicated Column6",{"Checking account status", "Account status description", "Month", "Credit history", "Credit history description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds", "Savings account/bonds description", "Employment status", "Employment status description", "Installment rate in % dispossable income", "Personal status & gender", "Personal status & gender description", "Other debtors/guarantors", "Other debtors/guarantors - Copy", "Present residence since", "Property", "Age in years", "Other installment plans", "Housing", "Number of existing bank credits", "Job", "Number of people being liable to provide maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns8" = Table.RenameColumns(#"Reordered Columns7",{{"Other debtors/guarantors - Copy", "Other debtors/guarantors description"}}),
    #"Replaced Value36" = Table.ReplaceValue(#"Renamed Columns8","A101","none",Replacer.ReplaceText,{"Other debtors/guarantors description"}),
    #"Replaced Value37" = Table.ReplaceValue(#"Replaced Value36","A102","co-applicant",Replacer.ReplaceText,{"Other debtors/guarantors description"}),
    #"Replaced Value38" = Table.ReplaceValue(#"Replaced Value37","A103","guarantor",Replacer.ReplaceText,{"Other debtors/guarantors description"}),
```

```
    #"Duplicated Column7" = Table.DuplicateColumn(#"Replaced Value38", "Property",
"Property - Copy"),
    #"Reordered Columns8" = Table.ReorderColumns(#"Duplicated Column7",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history
description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds",
"Savings account/bonds description", "Employment status", "Employment status
description", "Installment rate in % dispossable income", "Personal status & gender",
"Personal status & gender description", "Other debtors/guarantors", "Other
debtors/guarantors description", "Present residence since", "Property", "Property - Copy",
"Age in years", "Other installment plans", "Housing", "Number of existing bank credits",
"Job", "Number of people being liable to provide maintenance for", "Telephone", "Foreign
worker", "Cost Matrix"}),
    #"Renamed Columns9" = Table.RenameColumns(#"Reordered Columns8",{{"Property -
Copy", "Property description"}}),
    #"Replaced Value39" = Table.ReplaceValue(#"Renamed Columns9","A121","real
estate",Replacer.ReplaceText,{"Property description"}),
    #"Replaced Value40" = Table.ReplaceValue(#"Replaced Value39","A122","if not A121 :
building society savings agreement/ life insurance",Replacer.ReplaceText,{"Property
description"}),
    #"Replaced Value41" = Table.ReplaceValue(#"Replaced Value40","A123","if not
A121/A122 : car or other, not in attribute 6",Replacer.ReplaceText,{"Property description"}),
    #"Replaced Value42" = Table.ReplaceValue(#"Replaced Value41","A124","unknown / no
property",Replacer.ReplaceText,{"Property description"}),
    #"Duplicated Column8" = Table.DuplicateColumn(#"Replaced Value42", "Other installment
plans", "Other installment plans - Copy"),
    #"Reordered Columns9" = Table.ReorderColumns(#"Duplicated Column8",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history
description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds",
"Savings account/bonds description", "Employment status", "Employment status
description", "Installment rate in % dispossable income", "Personal status & gender",
"Personal status & gender description", "Other debtors/guarantors", "Other
debtors/guarantors description", "Present residence since", "Property", "Property
description", "Age in years", "Other installment plans", "Other installment plans - Copy",
"Housing", "Number of existing bank credits", "Job", "Number of people being liable to
provide maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns10" = Table.RenameColumns(#"Reordered Columns9",{{"Other
installment plans - Copy", "Other installment plans description"}}),
    #"Replaced Value43" = Table.ReplaceValue(#"Renamed
Columns10","A141","bank",Replacer.ReplaceText,{"Other installment plans description"}),
    #"Replaced Value44" = Table.ReplaceValue(#"Replaced
Value43","A142","stores",Replacer.ReplaceText,{"Other installment plans description"}),
    #"Replaced Value45" = Table.ReplaceValue(#"Replaced
Value44","A143","none",Replacer.ReplaceText,{"Other installment plans description"}),
    #"Duplicated Column9" = Table.DuplicateColumn(#"Replaced Value45", "Housing",
"Housing - Copy"),
    #"Reordered Columns10" = Table.ReorderColumns(#"Duplicated Column9",{"Checking
account status", "Account status description", "Month", "Credit history", "Credit history
```

```
description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds", "Savings account/bonds description", "Employment status", "Employment status description", "Installment rate in % dispossable income", "Personal status & gender", "Personal status & gender description", "Other debtors/guarantors", "Other debtors/guarantors description", "Present residence since", "Property", "Property description", "Age in years", "Other installment plans", "Other installment plans description", "Housing", "Housing - Copy", "Number of existing bank credits", "Job", "Number of people being liable to provide maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns11" = Table.RenameColumns(#"Reordered Columns10",{{"Housing - Copy", "Housing description"}}),
    #"Replaced Value46" = Table.ReplaceValue(#"Renamed Columns11","A151","rent",Replacer.ReplaceText,{"Housing description"}),
    #"Replaced Value47" = Table.ReplaceValue(#"Replaced Value46","A152","own",Replacer.ReplaceText,{"Housing description"}),
    #"Replaced Value48" = Table.ReplaceValue(#"Replaced Value47","A153","for free",Replacer.ReplaceText,{"Housing description"}),
    #"Duplicated Column10" = Table.DuplicateColumn(#"Replaced Value48", "Job", "Job - Copy"),
    #"Reordered Columns11" = Table.ReorderColumns(#"Duplicated Column10",{"Checking account status", "Account status description", "Month", "Credit history", "Credit history description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds", "Savings account/bonds description", "Employment status", "Employment status description", "Installment rate in % dispossable income", "Personal status & gender", "Personal status & gender description", "Other debtors/guarantors", "Other debtors/guarantors description", "Present residence since", "Property", "Property description", "Age in years", "Other installment plans", "Other installment plans description", "Housing", "Housing description", "Number of existing bank credits", "Job", "Job - Copy", "Number of people being liable to provide maintenance for", "Telephone", "Foreign worker", "Cost Matrix"}),
    #"Renamed Columns12" = Table.RenameColumns(#"Reordered Columns11",{{"Job - Copy", "Job description"}}),
    #"Replaced Value49" = Table.ReplaceValue(#"Renamed Columns12","A171","unemployed/ unskilled  - non-resident",Replacer.ReplaceText,{"Job description"}),
    #"Replaced Value50" = Table.ReplaceValue(#"Replaced Value49","A172","unskilled - resident",Replacer.ReplaceText,{"Job description"}),
    #"Replaced Value51" = Table.ReplaceValue(#"Replaced Value50","A173","skilled employee / official",Replacer.ReplaceText,{"Job description"}),
    #"Replaced Value52" = Table.ReplaceValue(#"Replaced Value51","A174","management/ self-employed/ highly qualified employee/ officer",Replacer.ReplaceText,{"Job description"}),
    #"Duplicated Column11" = Table.DuplicateColumn(#"Replaced Value52", "Telephone", "Telephone - Copy"),
    #"Reordered Columns12" = Table.ReorderColumns(#"Duplicated Column11",{"Checking account status", "Account status description", "Month", "Credit history", "Credit history description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds", "Savings account/bonds description", "Employment status", "Employment status description", "Installment rate in % dispossable income", "Personal status & gender",
```

"Personal status & gender description", "Other debtors/guarantors", "Other debtors/guarantors description", "Present residence since", "Property", "Property description", "Age in years", "Other installment plans", "Other installment plans description", "Housing", "Housing description", "Number of existing bank credits", "Job", "Job description", "Number of people being liable to provide maintenance for", "Telephone", "Telephone - Copy", "Foreign worker", "Cost Matrix"}),
#"Renamed Columns13" = Table.RenameColumns(#"Reordered Columns12",{{"Telephone - Copy", "Telephone description"}}),
#"Replaced Value53" = Table.ReplaceValue(#"Renamed Columns13","A191","none",Replacer.ReplaceText,{"Telephone description"}),
#"Replaced Value54" = Table.ReplaceValue(#"Replaced Value53","A192","yes, registered under the customers name",Replacer.ReplaceText,{"Telephone description"}),
#"Duplicated Column12" = Table.DuplicateColumn(#"Replaced Value54", "Foreign worker", "Foreign worker - Copy"),
#"Reordered Columns13" = Table.ReorderColumns(#"Duplicated Column12",{"Checking account status", "Account status description", "Month", "Credit history", "Credit history description", "Purpose", "Purpose description", "Credit amount", "Savings account/bonds", "Savings account/bonds description", "Employment status", "Employment status description", "Installment rate in % dispossable income", "Personal status & gender", "Personal status & gender description", "Other debtors/guarantors", "Other debtors/guarantors description", "Present residence since", "Property", "Property description", "Age in years", "Other installment plans", "Other installment plans description", "Housing", "Housing description", "Number of existing bank credits", "Job", "Job description", "Number of people being liable to provide maintenance for", "Telephone", "Telephone description", "Foreign worker", "Foreign worker - Copy", "Cost Matrix"}),
#"Renamed Columns14" = Table.RenameColumns(#"Reordered Columns13",{{"Foreign worker - Copy", "Foreign worker description"}}),
#"Replaced Value55" = Table.ReplaceValue(#"Renamed Columns14","A201","yes",Replacer.ReplaceText,{"Foreign worker description"}),
#"Replaced Value56" = Table.ReplaceValue(#"Replaced Value55","A202","no",Replacer.ReplaceText,{"Foreign worker description"}),
#"Renamed Columns15" = Table.RenameColumns(#"Replaced Value56",{{"Month", "Duration in Month"}})
in
#"Renamed Columns15"

3. German.data-numeric

Column 1 and column 27 have been removed due to missing values in excel file “German-data-numeric” table.

Power query applied steps:

let
Source = Csv.Document(File.Contents("C:\Users\lesed\Downloads\statlog+german+credit+data\german.data-numeric"),27,"",ExtraValues.Ignore,1252),
#"Changed Type" = Table.TransformColumnTypes(Source,{{"Column1", type text}, {"Column2", Int64.Type}, {"Column3", Int64.Type}, {"Column4", Int64.Type}, {"Column5",

```
Int64.Type}, {"Column6", Int64.Type}, {"Column7", Int64.Type}, {"Column8", Int64.Type},
{"Column9", Int64.Type}, {"Column10", Int64.Type}, {"Column11", Int64.Type}, {"Column12",
Int64.Type}, {"Column13", Int64.Type}, {"Column14", Int64.Type}, {"Column15", Int64.Type},
{"Column16", Int64.Type}, {"Column17", Int64.Type}, {"Column18", Int64.Type},
{"Column19", Int64.Type}, {"Column20", Int64.Type}, {"Column21", Int64.Type},
{"Column22", Int64.Type}, {"Column23", Int64.Type}, {"Column24", Int64.Type},
{"Column25", Int64.Type}, {"Column26", Int64.Type}, {"Column27", type text}}),
   #"Removed Columns" = Table.RemoveColumns(#"Changed Type",{"Column1",
"Column27"})
in
   #"Removed Columns"
```

Summary of descriptive statistics for all numerical columns in german-data-numeric excel file.

Column2		***Column3***		***Column4***	
Mean	2,577	Mean	20,903	Mean	2,545
Standard Error	0,039769997	Standard Error	0,381333196	Standard Error	0,03425125
Median	2	Median	18	Median	2
Mode	4	Mode	24	Mode	2
Standard Deviation	1,257637727	Standard Deviation	12,05881445	Standard Deviation	1,083119637
Sample Variance	1,581652653	Sample Variance	145,415006	Sample Variance	1,173148148
Kurtosis	-1,663703046	Kurtosis	0,91978136	Kurtosis	-0,579055661
Skewness	0,006957033	Skewness	1,094184172	Skewness	-0,011885974
Range	3	Range	68	Range	4
Minimum	1	Minimum	4	Minimum	0
Maximum	4	Maximum	72	Maximum	4
Sum	2577	Sum	20903	Sum	2545
Count	1000	Count	1000	Count	1000

Column5		***Column6***		***Column7***	
Mean	32,711	Mean	2,105	Mean	3,384
Standard Error	0,893425816	Standard Error	0,049964702	Standard Error	0,038209999
Median	23	Median	1	Median	3
Mode	13	Mode	1	Mode	3
Standard Deviation	28,25260499	Standard Deviation	1,580022617	Standard Deviation	1,208306254
Sample Variance	798,2096887	Sample Variance	2,496471471	Sample Variance	1,460004004
Kurtosis	-4,286525509	Kurtosis	-0,680224443	Kurtosis	-0,934330517
Skewness	1,949164038	Skewness	1,016676877	Skewness	-0,117614693
Range	182	Range	4	Range	4
Minimum	2	Minimum	1	Minimum	1
Maximum	184	Maximum	5	Maximum	5

Sum	32711	Sum	2105	Sum	3384
Count	1000	Count	1000	Count	1000

Column8		*Column9*		*Column10*	
Mean	2,682	Mean	2,845	Mean	2,358
Standard Error	0,022391458	Standard Error	0,034902624	Standard Error	0,033210525
Median	3	Median	3	Median	2
Mode	3	Mode	4	Mode	3
Standard Deviation	0,708080064	Standard Deviation	1,103717896	Standard Deviation	1,050208998
Sample Variance	0,501377377	Sample Variance	1,218193193	Sample Variance	1,102938939
Kurtosis	-0,002567249	Kurtosis	-1,381448503	Kurtosis	-1,238515037
Skewness	-0,305146382	Skewness	-0,272569814	Skewness	0,045673212
Range	3	Range	3	Range	3
Minimum	1	Minimum	1	Minimum	1
Maximum	4	Maximum	4	Maximum	4
Sum	2682	Sum	2845	Sum	2358
Count	1000	Count	1000	Count	1000

Column11		*Column12*		*Column13*	
Mean	35,546	Mean	2,675	Mean	1,407
Standard Error	0,359723901	Standard Error	0,022313065	Standard Error	0,018267038
Median	33	Median	3	Median	1
Mode	27	Mode	3	Mode	1
Standard Deviation	11,37546857	Standard Deviation	0,705601072	Standard Deviation	0,577654468
Sample Variance	129,4012853	Sample Variance	0,497872873	Sample Variance	0,333684685
Kurtosis	0,595779567	Kurtosis	-1,512587604	Kurtosis	1,604439372
Skewness	1,020739269	Skewness	-1,826517512	Skewness	1,272575967
Range	56	Range	2	Range	3
Minimum	19	Minimum	1	Minimum	1
Maximum	75	Maximum	3	Maximum	4
Sum	35546	Sum	2675	Sum	1407
Count	1000	Count	1000	Count	1000

Column14		*Column15*		*Column16*	
Mean	1,155	Mean	1,404	Mean	1,037
Standard Error	0,011450157	Standard Error	0,015524981	Standard Error	0,005972158
Median	1	Median	1	Median	1
Mode	1	Mode	1	Mode	1
Standard Deviation	0,362085772	Standard Deviation	0,490942996	Standard Deviation	0,188856206
Sample Variance	0,131106106	Sample Variance	0,241025025	Sample Variance	0,035666667

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Kurtosis	1,649273694	Kurtosis	1,850143898	Kurtosis	22,18219846
Skewness	1,909444721	Skewness	0,391867836	Skewness	4,913027374
Range	1	Range	1	Range	1
Minimum	1	Minimum	1	Minimum	1
Maximum	2	Maximum	2	Maximum	2
Sum	1155	Sum	1404	Sum	1037
Count	1000	Count	1000	Count	1000

Column17		***Column18***		***Column19***	
Mean	0,234	Mean	0,103	Mean	0,907
Standard Error	0,013394903	Standard Error	0,009616833	Standard Error	0,009188876
Median	0	Median	0	Median	1
Mode	0	Mode	0	Mode	1
Standard Deviation	0,423584022	Standard Deviation	0,304110972	Standard Deviation	0,290577761
Sample Variance	0,179423423	Sample Variance	0,092483483	Sample Variance	0,084435435
Kurtosis	-0,417101281	Kurtosis	4,85379409	Kurtosis	5,890629955
Skewness	1,258466101	Skewness	2,616121268	Skewness	-2,806929403
Range	1	Range	1	Range	1
Minimum	0	Minimum	0	Minimum	0
Maximum	1	Maximum	1	Maximum	1
Sum	234	Sum	103	Sum	907
Count	1000	Count	1000	Count	1000

Column20		***Column21***		***Column22***	
Mean	0,041	Mean	0,179	Mean	0,713
Standard Error	0,006273624	Standard Error	0,012128731	Standard Error	0,014312087
Median	0	Median	0	Median	1
Mode	0	Mode	0	Mode	1
Standard Deviation	0,198389411	Standard Deviation	0,383544138	Standard Deviation	0,452587932
Sample Variance	0,039358358	Sample Variance	0,147106106	Sample Variance	0,204835836
Kurtosis	19,5365368	Kurtosis	0,814680686	Kurtosis	-1,112716692
Skewness	4,63653617	Skewness	1,677216541	Skewness	-0,943139836
Range	1	Range	1	Range	1
Minimum	0	Minimum	0	Minimum	0
Maximum	1	Maximum	1	Maximum	1
Sum	41	Sum	179	Sum	713
Count	1000	Count	1000	Count	1000

Column23		*Column24*		*Column25*	
Mean	0,022	Mean	0,2	Mean	0,63
Standard Error	0,004640855	Standard Error	0,01265544	Standard Error	0,015275252
Median	0	Median	0	Median	1
Mode	0	Mode	0	Mode	1
Standard Deviation	0,146756729	Standard Deviation	0,40020015	Standard Deviation	0,483045892
Sample Variance	0,021537538	Sample Variance	0,16016016	Sample Variance	0,233333333
Kurtosis	40,68618065	Kurtosis	0,257278599	Kurtosis	-1,712552487
Skewness	6,527236179	Skewness	1,502254321	Skewness	-0,539329796
Range	1	Range	1	Range	1
Minimum	0	Minimum	0	Minimum	0
Maximum	1	Maximum	1	Maximum	1
Sum	22	Sum	200	Sum	630
Count	1000	Count	1000	Count	1000

Column26	
Mean	1,3
Standard Error	0,014498628
Median	1
Mode	1
Standard Deviation	0,45848687
Sample Variance	0,21021021
Kurtosis	-1,23828399
Skewness	0,874183383
Range	1
Minimum	1
Maximum	2
Sum	1300
Count	1000

Conclusion

Descriptive statistics explained numerical values in detail to smooth the process of deciding about the provided data set. These values have a special definition within the field of data science to optimize financial services and credit provider. It is very important for The Shard organisation to consider my technical assessment for a successful and meaningful insights and analytics of data distribution. Please see the power query codes used to transform German text data files into an excel spreadsheet. Kindly note, excel was chosen due to enough advantages and add-ins of data manipulation that requires cleaning and intensive preparation. All the relevant findings of data transformation are added to github repository.