```
import pandas as pd
import numpy as np

df = pd.read_csv('Bank-Loan.csv')

pd.set_option('display.max_columns', None)
df
```

```
df['NAME_CONTRACT_TYPE'].unique()
```

```
array(['Cash loans', 'Revolving loans'], dtype=object)
```

```
df['NAME_CONTRACT_TYPE'].replace({'Cash loans':0,'Revolving loans':1},inplace=True)

df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALT
0	100002	1	0	M	N	Y
1	100003	0	0	F	N	N
2	100004	0	1	M	Y	Y
3	100006	0	0	F	N	Y
4	100007	0	0	M	N	Y

```
df['CODE_GENDER'].replace({'M':0,'F':1},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALT'

```
df['FLAG_OWN_CAR'].replace({'N':0,'Y':1},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	Y	0	202500.0	406597.5	
1	100003	0	0	1	0	N	0	270000.0	1293502.5	
2	100004	0	1	0	1	Y	0	67500.0	135000.0	
3	100006	0	0	1	0	Y	0	135000.0	312682.5	
4	100007	0	0	0	0	Y	0	121500.0	513000.0	

```
df['FLAG_OWN_REALTY'].replace({'N':0,'Y':1},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['NAME_TYPE_SUITE'].unique()
```

```
array(['Unaccompanied', 'Family', 'Spouse, partner', 'Children',
       'Other_A', nan, 'Other_B', 'Group of people'], dtype=object)
```

```
df['NAME_TYPE_SUITE'].replace({'Unaccompanied':0,'Family':1,'Spouse, partner':2,'Children':3,'Other_A':4,'Other_B':5,'Group of people':6
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['NAME_INCOME_TYPE'].unique()
```

```
array(['Working', 'State servant', 'Commercial associate', 'Pensioner',
       'Unemployed', 'Student', 'Businessman', 'Maternity leave'],
      dtype=object)
```

```
df['NAME_INCOME_TYPE'].replace({'Working':0,'State servant':1,'Commercial associate':2,'Pensioner':3,'Unemployed':4,'Student':5,'Busines
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	

```
df['NAME_EDUCATION_TYPE'].unique()
```

```
array(['Secondary / secondary special', 'Higher education',
       'Incomplete higher', 'Lower secondary', 'Academic degree'],
      dtype=object)
```

```
df['NAME_EDUCATION_TYPE'].replace({'Secondary / secondary special':0,'Higher education':1,'Incomplete higher':2,'Lower secondary':3,'Acad
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['NAME_FAMILY_STATUS'].unique()
```

```
array(['Single / not married', 'Married', 'Civil marriage', 'Widow',
       'Separated', 'Unknown'], dtype=object)
```

```
df['NAME_FAMILY_STATUS'].replace({'Single / not married':0,'Married':1,'Civil marriage':2,'Widow':3,'Separated':4,'Unknown':np.nan},inpla
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['NAME_HOUSING_TYPE'].unique()
```

```
array(['House / apartment', 'Rented apartment', 'With parents',
       'Municipal apartment', 'Office apartment', 'Co-op apartment'],
      dtype=object)
```

```
df['NAME_HOUSING_TYPE'].replace({'House / apartment':0,'Rented apartment':1,'With parents':2,'Municipal apartment':3,'Offi
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['OCCUPATION_TYPE'].unique()
```

```
array(['Laborers', 'Core staff', 'Accountants', 'Managers', nan,
       'Drivers', 'Sales staff', 'Cleaning staff', 'Cooking staff',
       'Private service staff', 'Medicine staff', 'Security staff',
       'High skill tech staff', 'Waiters/barmen staff',
       'Low-skill Laborers', 'Realty agents', 'Secretaries', 'IT staff',
       'HR staff'], dtype=object)
```

```
df['OCCUPATION_TYPE'].replace({'Laborers': 0,
    'Core staff': 1,
    'Accountants': 2,
    'Managers': 3,
    'Drivers': 4,
    'Sales staff': 5,
    'Cleaning staff': 6,
    'Cooking staff': 7,
    'Private service staff': 8,
    'Medicine staff': 9,
    'Security staff': 10,
    'High skill tech staff': 11,
    'Waiters/barmen staff': 12,
    'Low-skill Laborers': 13,
    'Realty agents': 14,
    'Secretaries': 15,
    'IT staff': 16,
    'HR staff': 17},inplace=True)
```

```
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['WEEKDAY_APPR_PROCESS_START'].unique()
```

```
array(['WEDNESDAY', 'MONDAY', 'THURSDAY', 'SUNDAY', 'SATURDAY', 'FRIDAY',
       'TUESDAY'], dtype=object)
```

```
df['WEEKDAY_APPR_PROCESS_START'].replace({'SUNDAY': 0,
    'MONDAY': 1,
    'TUESDAY': 2,
    'WEDNESDAY': 3,
    'THURSDAY': 4,
    'FRIDAY': 5,
    'SATURDAY': 6},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['ORGANIZATION_TYPE'].unique()
```

```
array(['Business Entity Type 3', 'School', 'Government', 'Religion',
       'Other', 'XNA', 'Electricity', 'Medicine',
       'Business Entity Type 2', 'Self-employed', 'Transport: type 2',
       'Construction', 'Housing', 'Kindergarten', 'Trade: type 7',
       'Industry: type 11', 'Military', 'Services', 'Security Ministries',
       'Transport: type 4', 'Industry: type 1', 'Emergency', 'Security',
       'Trade: type 2', 'University', 'Transport: type 3', 'Police',
       'Business Entity Type 1', 'Postal', 'Industry: type 4',
       'Agriculture', 'Restaurant', 'Culture', 'Hotel',
```

```
            'Industry: type 7', 'Trade: type 3', 'Industry: type 3', 'Bank',
            'Industry: type 9', 'Insurance', 'Trade: type 6',
            'Industry: type 2', 'Transport: type 1', 'Industry: type 12',
            'Mobile', 'Trade: type 1', 'Industry: type 5', 'Industry: type 10',
            'Legal Services', 'Advertising', 'Trade: type 5', 'Cleaning',
            'Industry: type 13', 'Trade: type 4', 'Telecom',
            'Industry: type 8', 'Realtor', 'Industry: type 6'], dtype=object)
```

```
df['ORGANIZATION_TYPE'].replace({
    'Business Entity Type 3': 0,
    'School': 1,
    'Government': 2,
    'Religion': 3,
    'Other': 4,
    'XNA': 5,
    'Electricity': 6,
    'Medicine': 7,
    'Business Entity Type 2': 8,
    'Self-employed': 9,
    'Transport: type 2': 10,
    'Construction': 11,
    'Housing': 12,
    'Kindergarten': 13,
    'Trade: type 7': 14,
    'Industry: type 11': 15,
    'Military': 16,
    'Services': 17,
    'Security Ministries': 18,
    'Transport: type 4': 19,
    'Industry: type 1': 20,
    'Emergency': 21,
    'Security': 22,
    'Trade: type 2': 23,
    'University': 24,
    'Transport: type 3': 25,
    'Police': 26,
    'Business Entity Type 1': 27,
    'Postal': 28,
    'Industry: type 4': 29,
    'Agriculture': 30,
    'Restaurant': 31,
    'Culture': 32,
    'Hotel': 33,
    'Industry: type 7': 34,
    'Trade: type 3': 35,
    'Industry: type 3': 36,
    'Bank': 37,
    'Industry: type 9': 38,
    'Insurance': 39,
    'Trade: type 6': 40,
    'Industry: type 2': 41,
    'Transport: type 1': 42,
    'Industry: type 12': 43,
    'Mobile': 44,
    'Trade: type 1': 45,
    'Industry: type 5': 46,
    'Industry: type 10': 47,
    'Legal Services': 48,
    'Advertising': 49,
    'Trade: type 5': 50,
    'Cleaning': 51,
    'Industry: type 13': 52,
    'Trade: type 4': 53,
    'Telecom': 54,
    'Industry: type 8': 55,
    'Realtor': 56,
    'Industry: type 6': 57
},inplace=True)
```

```
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['FONDKAPREMONT_MODE'].unique()
```

```
array(['reg oper account', nan, 'org spec account',
       'reg oper spec account', 'not specified'], dtype=object)
```

```
df['FONDKAPREMONT_MODE'].replace({'reg oper account': 0,
    'org spec account': 1,
    'reg oper spec account': 2,
    'not specified': np.nan},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['HOUSETYPE_MODE'].unique()
```

```
array(['block of flats', nan, 'terraced house', 'specific housing'],
      dtype=object)
```

```
df['HOUSETYPE_MODE'].replace({
    'block of flats':0,
    'terraced house':1,
    'specific housing':2
},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['WALLSMATERIAL_MODE'].unique()
```

```
array(['Stone, brick', 'Block', nan, 'Panel', 'Mixed', 'Wooden', 'Others',
       'Monolithic'], dtype=object)
```

```
df['WALLSMATERIAL_MODE'].replace({
    'Stone, brick': 0,
    'Block': 1,
    'Panel': 2,
    'Mixed': 3,
    'Wooden': 4,
    'Others': 5,
    'Monolithic': 6
},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	202500.0	406597.5	
1	100003	0	0	1	0	0	0	270000.0	1293502.5	
2	100004	0	1	0	1	1	0	67500.0	135000.0	
3	100006	0	0	1	0	1	0	135000.0	312682.5	
4	100007	0	0	0	0	1	0	121500.0	513000.0	

```
df['AMT_INCOME_TOTAL'].min()
```

```
25650.0
```

```
df['AMT_INCOME_TOTAL'].max()
```

```
117000000.0
```

```
TOTAL']=df['AMT_INCOME_TOTAL'].apply(lambda v:(v-df['AMT_INCOME_TOTAL'].min()))/(df['AMT_INCOME_TOTAL'].max()-df['AMT_INC(
```

```
df['AMT_CREDIT'].min()
```

```
45000.0
```

```
df['AMT_CREDIT'].max()
```

```
4050000.0
```

```
df['AMT_CREDIT']=df['AMT_CREDIT'].apply(lambda v:(v-df['AMT_CREDIT'].min()))/(df['AMT_CREDIT'].max()-df['AMT_CREDIT'].min())
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['AMT_ANNUITY'].min()
```

```
1615.5
```

```
df['AMT_ANNUITY'].max()
```

```
258025.5
```

```
df['AMT_ANNUITY']=df['AMT_ANNUITY'].apply(lambda v:(v-df['AMT_ANNUITY'].min()))/(df['AMT_ANNUITY'].max()-df['AMT_ANNUITY'].min())
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['AMT_GOODS_PRICE'].min()
```

```
40500.0
```

```
df['AMT_GOODS_PRICE'].max()
```

```
4050000.0
```

```
df['AMT_GOODS_PRICE']=df['AMT_GOODS_PRICE'].apply(lambda v:(v-df['AMT_GOODS_PRICE'].min()))/(df['AMT_GOODS_PRICE'].max()-df['AMT_GOODS_PR
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['DAYS_BIRTH']=df['DAYS_BIRTH'].apply(lambda v:(v-df['DAYS_BIRTH'].min()))/(df['DAYS_BIRTH'].max()-df['DAYS_BIRTH'].min(
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['DAYS_EMPLOYED']=df['DAYS_EMPLOYED'].apply(lambda v:(v-df['DAYS_EMPLOYED'].min()))/(df['DAYS_EMPLOYED'].max()-df['DAYS_
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['DAYS_REGISTRATION'].min()
```

```
-24672.0
```

```
df['DAYS_REGISTRATION'].max()
```

```
0.0
```

```
df['DAYS_REGISTRATION']=df['DAYS_REGISTRATION'].apply(lambda v:(v-df['DAYS_REGISTRATION'].min()))/(df['DAYS_REGISTRATION'].max()-df['DAYS
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['DAYS_ID_PUBLISH'].min()
```

```
-7197
```

```
df['DAYS_ID_PUBLISH'].max()
```

```
0
```

```
df['DAYS_ID_PUBLISH']=df['DAYS_ID_PUBLISH'].apply(lambda v:(v-df['DAYS_ID_PUBLISH'].min()))/(df['DAYS_ID_PUBLISH'].max()-df['DAYS_ID_PUBL
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['OWN_CAR_AGE'].min()
```

```
0.0
```

```
df['OWN_CAR_AGE'].max()
```

```
91.0
```

```
df['OWN_CAR_AGE']=df['OWN_CAR_AGE'].apply(lambda v:(v-df['OWN_CAR_AGE'].min()))/(df['OWN_CAR_AGE'].max()-df['OWN_CAR_AGE'].min())
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['HOUR_APPR_PROCESS_START'].min()
```

```
0
```

```
df['HOUR_APPR_PROCESS_START'].max()
```

```
23
```

```
df['HOUR_APPR_PROCESS_START']=df['HOUR_APPR_PROCESS_START'].apply(lambda v:(v-df['HOUR_APPR_PROCESS_START'].min()))/(df['HOUR_APPR_PROCES
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['EMERGENCYSTATE_MODE'].unique()
```

```
array(['No', nan, 'Yes'], dtype=object)
```

```
df['EMERGENCYSTATE_MODE'].replace({'No':0,'Yes':1},inplace=True)
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A

```
df['OBS_30_CNT_SOCIAL_CIRCLE'].min()
```

```
0.0
```

2	100004	0	1	0	1	1	0	0.000358	0.022472

```
df['OBS_30_CNT_SOCIAL_CIRCLE'].max()
```

```
348.0
```

```
df['OBS_30_CNT_SOCIAL_CIRCLE']=df['OBS_30_CNT_SOCIAL_CIRCLE'].apply(lambda v:(v-df['OBS_30_CNT_SOCIAL_CIRCLE'].min()))/(df['OBS_30_CNT_SC
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['DEF_30_CNT_SOCIAL_CIRCLE'].min()
```

```
0.0
```

```
df['DEF_30_CNT_SOCIAL_CIRCLE'].max()
```

```
34.0
```

```
df['DEF_30_CNT_SOCIAL_CIRCLE']=df['DEF_30_CNT_SOCIAL_CIRCLE'].apply(lambda v:(v-df['DEF_30_CNT_SOCIAL_CIRCLE'].min()))/(df['DEF_30_CNT_SC
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['OBS_60_CNT_SOCIAL_CIRCLE'].min()
```

```
0.0
```

```
df['OBS_60_CNT_SOCIAL_CIRCLE'].max()
```

```
344.0
```

```
df['OBS_60_CNT_SOCIAL_CIRCLE']=df['OBS_60_CNT_SOCIAL_CIRCLE'].apply(lambda v:(v-df['OBS_60_CNT_SOCIAL_CIRCLE'].min()))/(df['OBS_60_CNT_SC
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['DEF_60_CNT_SOCIAL_CIRCLE'].min()
```

```
0.0
```

```
df['DEF_60_CNT_SOCIAL_CIRCLE'].max()
```

```
24.0
```

```
df['DEF_60_CNT_SOCIAL_CIRCLE']=df['DEF_60_CNT_SOCIAL_CIRCLE'].apply(lambda v:(v-df['DEF_60_CNT_SOCIAL_CIRCLE'].min()))/(df['DEF_60_CNT_SO
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['DAYS_LAST_PHONE_CHANGE'].min()
```

```
-4292.0
```

```
df['DAYS_LAST_PHONE_CHANGE'].max()
```

```
0.0
```

```
df['DAYS_LAST_PHONE_CHANGE']=df['DAYS_LAST_PHONE_CHANGE'].apply(lambda v:(v-df['DAYS_LAST_PHONE_CHANGE'].min()))/(df['DAYS_LAST_PHONE_CHA
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['AMT_REQ_CREDIT_BUREAU_HOUR'].min()
```

```
0.0
```

```
df['AMT_REQ_CREDIT_BUREAU_HOUR'].max()
```

```
4.0
```

```
df['AMT_REQ_CREDIT_BUREAU_HOUR']=df['AMT_REQ_CREDIT_BUREAU_HOUR'].apply(lambda v:(v-df['AMT_REQ_CREDIT_BUREAU_HOUR'].min()))/(df['AMT_REQ
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['AMT_REQ_CREDIT_BUREAU_DAY'].min()
```

```
0.0
```

```
df['AMT_REQ_CREDIT_BUREAU_DAY'].max()
```

```
9.0
```

```
df['AMT_REQ_CREDIT_BUREAU_DAY']=df['AMT_REQ_CREDIT_BUREAU_DAY'].apply(lambda v:(v-df['AMT_REQ_CREDIT_BUREAU_DAY'].min()))/(df['AMT_REQ_CR
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['AMT_REQ_CREDIT_BUREAU_WEEK'].min()
```

```
0.0
```

```
df['AMT_REQ_CREDIT_BUREAU_WEEK'].max()
```

```
8.0
```

```
df['AMT_REQ_CREDIT_BUREAU_WEEK']=df['AMT_REQ_CREDIT_BUREAU_WEEK'].apply(lambda v:(v-df['AMT_REQ_CREDIT_BUREAU_WEEK'].min()))/(df['AMT_REQ
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['AMT_REQ_CREDIT_BUREAU_MON'].min()
```

```
0.0
```

```
df['AMT_REQ_CREDIT_BUREAU_MON'].max()
```

```
27.0
```

```
df['AMT_REQ_CREDIT_BUREAU_MON']=df['AMT_REQ_CREDIT_BUREAU_MON'].apply(lambda v:(v-df['AMT_REQ_CREDIT_BUREAU_MON'].min()))/(df['AMT_REQ_CR
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df['AMT_REQ_CREDIT_BUREAU_QRT'].min()
```

```
0.0
```

```
df['AMT_REQ_CREDIT_BUREAU_QRT'].max()
```

```
261.0
```

```
df['AMT_REQ_CREDIT_BUREAU_QRT']=df['AMT_REQ_CREDIT_BUREAU_QRT'].apply(lambda v:(v-df['AMT_REQ_CREDIT_BUREAU_QRT'].min()))/(df['AMT_REQ_CR
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	

```
df['AMT_REQ_CREDIT_BUREAU_YEAR'].min()
```

```
0.0
```

```
df['AMT_REQ_CREDIT_BUREAU_YEAR'].max()
```

```
25.0
```

```
df['AMT_REQ_CREDIT_BUREAU_YEAR']=df['AMT_REQ_CREDIT_BUREAU_YEAR'].apply(lambda v:(v-df['AMT_REQ_CREDIT_BUREAU_YEAR'].min()))/(df['AMT_REQ
df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
df.to_csv('Bank_Preprocessed.csv',index=False)
```

```
new_df=pd.read_csv('Bank_Preprocessed.csv',low_memory=False)
new_df.head()
```

	SK_ID_CURR	TARGET	NAME_CONTRACT_TYPE	CODE_GENDER	FLAG_OWN_CAR	FLAG_OWN_REALTY	CNT_CHILDREN	AMT_INCOME_TOTAL	AMT_CREDIT	A
0	100002	1	0	0	0	1	0	0.001512	0.090287	
1	100003	0	0	1	0	0	0	0.002089	0.311736	
2	100004	0	1	0	1	1	0	0.000358	0.022472	
3	100006	0	0	1	0	1	0	0.000935	0.066837	
4	100007	0	0	0	0	1	0	0.000819	0.116854	

```
pd.set_option('display.max_rows', None)
new_df.corr(numeric_only=True)
```