```
import pandas as pd
import numpy as np
df=pd.read csv('HR-Employee-Attrition.csv')
df
      Age Attrition
                         BusinessTravel
                                          DailyRate
Department \
       41
                 Yes
                          Travel Rarely
                                                1102
Sales
1
       49
                  No Travel Frequently
                                                 279
                                                      Research &
Development
                          Travel Rarely
                                                1373
                                                      Research &
       37
                 Yes
Development
                      Travel Frequently
                                                      Research &
       33
                  No
                                                1392
Development
       27
                  No
                          Travel Rarely
                                                 591
                                                      Research &
Development
                                                 . . .
. . .
1465
                  No Travel_Frequently
                                                 884
                                                      Research &
       36
Development
1466
       39
                  No
                          Travel Rarely
                                                 613
                                                      Research &
Development
1467
       27
                  No
                          Travel Rarely
                                                 155
                                                      Research &
Development
                  No Travel Frequently
1468
       49
                                                1023
Sales
1469
       34
                  No
                          Travel Rarely
                                                 628
                                                      Research &
Development
      DistanceFromHome
                         Education EducationField
                                                     EmployeeCount
0
                      1
                                    Life Sciences
                                                                  1
1
                      8
                                  1
                                    Life Sciences
                                                                  1
2
                      2
                                                                  1
                                  2
                                              0ther
3
                      3
                                                                  1
                                  4
                                     Life Sciences
                      2
4
                                  1
                                           Medical
                                                                  1
                     23
                                  2
                                           Medical
                                                                  1
1465
                                           Medical
                                                                  1
1466
                      6
                                  1
                                  3
1467
                      4
                                     Life Sciences
                                                                  1
                      2
                                  3
                                                                  1
1468
                                           Medical
                      8
                                  3
                                           Medical
                                                                  1
1469
      EmployeeNumber
                            RelationshipSatisfaction StandardHours \
                       . . .
0
                    1
                                                     1
                                                                   80
                       . . .
1
                    2
                                                     4
                                                                   80
2
                                                     2
                    4
                                                                   80
                        . . .
3
                    5
                                                     3
                                                                   80
4
                                                                   80
```

```
3
1465
                  2061
                                                                         80
1466
                  2062
                                                          1
                                                                         80
                                                          2
1467
                  2064
                                                                         80
1468
                                                          4
                                                                         80
                  2065
                                                          1
1469
                  2068
                                                                         80
       StockOptionLevel
                           TotalWorkingYears
                                                  TrainingTimesLastYear
0
                                             10
                        1
                                                                         3
1
                                                                         3
2
                        0
                                              7
3
                                                                         3
                        0
                                              8
                                                                         3
4
                        1
                                              6
                                                                         3
1465
                        1
                                             17
                                                                         5
1466
                        1
                                              9
                                                                         0
1467
                        1
                                              6
1468
                        0
                                             17
                                                                         3
1469
                                                                         3
                         YearsAtCompany YearsInCurrentRole
     WorkLifeBalance
0
                      1
                                         6
1
                      3
                                       10
                                                               7
2
                      3
                                         0
                                                               0
3
                      3
                                         8
                                                               7
                                         2
4
                      3
                                                               2
                                                               2
7
                                         5
1465
                      3
1466
                      3
                                         7
                      3
2
                                                               2
                                         6
1467
                                                               6
                                         9
1468
                                         4
1469
       YearsSinceLastPromotion
                                   YearsWithCurrManager
0
                                                          7
1
                                1
2
                                0
                                                          0
3
                                3
                                                          0
                                                          2
4
                                2
                                                          3
                                0
1465
                                                          7
1466
                                1
                                                          3
                                0
1467
                                                          8
1468
                                0
1469
[1470 rows x 35 columns]
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1470 entries, 0 to 1469
Data columns (total 35 columns):
     Column
                                Non-Null Count
                                                 Dtype
     -----
 0
                                1470 non-null
     Age
                                                 int64
 1
     Attrition
                                1470 non-null
                                                 object
 2
                                1470 non-null
                                                 object
     BusinessTravel
 3
     DailyRate
                                1470 non-null
                                                 int64
 4
     Department
                                1470 non-null
                                                 object
 5
     DistanceFromHome
                                1470 non-null
                                                 int64
 6
     Education
                                1470 non-null
                                                 int64
 7
     EducationField
                                1470 non-null
                                                 object
 8
     EmployeeCount
                                1470 non-null
                                                 int64
 9
     EmployeeNumber
                                1470 non-null
                                                 int64
 10
                                1470 non-null
     EnvironmentSatisfaction
                                                 int64
 11
     Gender
                                1470 non-null
                                                 object
                                1470 non-null
 12
     HourlyRate
                                                 int64
 13
     JobInvolvement
                                1470 non-null
                                                 int64
 14
     JobLevel
                                1470 non-null
                                                 int64
 15
     JobRole
                                1470 non-null
                                                 object
 16
     JobSatisfaction
                                1470 non-null
                                                 int64
 17
     MaritalStatus
                                1470 non-null
                                                 object
 18
    MonthlyIncome
                                1470 non-null
                                                 int64
     MonthlyRate
 19
                                1470 non-null
                                                 int64
 20
     NumCompaniesWorked
                                1470 non-null
                                                 int64
 21
     0ver18
                                1470 non-null
                                                 object
 22
     OverTime
                                1470 non-null
                                                 object
 23
     PercentSalaryHike
                                1470 non-null
                                                 int64
 24
     PerformanceRating
                                1470 non-null
                                                 int64
 25
     RelationshipSatisfaction
                                1470 non-null
                                                 int64
 26
     StandardHours
                                1470 non-null
                                                 int64
 27
     StockOptionLevel
                                1470 non-null
                                                 int64
 28
    TotalWorkingYears
                                1470 non-null
                                                 int64
 29
    TrainingTimesLastYear
                                1470 non-null
                                                 int64
    WorkLifeBalance
                                1470 non-null
 30
                                                 int64
 31
    YearsAtCompany
                                1470 non-null
                                                 int64
 32
    YearsInCurrentRole
                                1470 non-null
                                                 int64
 33
     YearsSinceLastPromotion
                                1470 non-null
                                                 int64
 34 YearsWithCurrManager
                                1470 non-null
                                                 int64
dtypes: int64(26), object(9)
memory usage: 402.1+ KB
df.describe()
                                  DistanceFromHome
                                                       Education
               Age
                       DailyRate
EmployeeCount
count 1470.000000
                   1470.000000
                                        1470.000000
                                                     1470.000000
1470.0
         36.923810
                      802.485714
                                           9.192517
                                                        2.912925
mean
```

1.0 std	9.135373	403.509100	8.10686	4 1.024165
0.0	9.133373	403.309100	0.10000	4 1.024103
min	18.000000	102.000000	1.00000	0 1.000000
1.0				
25%	30.000000	465.000000	2.00000	0 2.000000
1.0	26 000000	002 000000	7 00000	0 3 000000
50% 1.0	36.000000	802.000000	7.00000	0 3.000000
75%	43.000000 1	157.000000	14.00000	0 4.000000
1.0				
max	60.000000 1	499.000000	29.00000	0 5.000000
1.0				
	EmployeeNumber	Fnyironment	tSatisfaction	HourlyRate
JobInvo		LIIVII OIIIIEII	t Jact 3 lact 1011	nour cynace
count	1470.000000		1470.000000	1470.000000
1470.00				
mean	1024.865306	j	2.721769	65.891156
2.72993 std	2 602.024335		1.093082	20.329428
0.71156			1.093002	20.329420
min	1.00000		1.000000	30.000000
1.00000	0			
25%	491.250000		2.000000	48.000000
2.00000			2 000000	66 000000
50% 3.00000	1020.500000 ຄ		3.000000	66.000000
75%	1555.750000		4.000000	83.750000
3.00000				
max	2068.000000		4.000000	100.000000
4.00000	0			
	JobLevel .	Relations	shipSatisfactio	n StandardHours \
count	1470 000000		1470.00000	
mean			2.71224	
std		• •	1.08120	
min		• •	1.00000	
25% 50%	2 000000		2.00000 3.0000	
75%	2 000000		4.00000	
max	5.000000		4.00000	
	StockOptionLev 1470.0000			ningTimesLastYear \
count mean	0.7938		70.000000 11.279592	1470.000000 2.799320
std	0.7530		7.780782	1.289271
min	0.0000		0.000000	0.000000
25%	0.0000		6.000000	2.000000
50%	1.0000	100	10.000000	3.000000

```
75%
                1.000000
                                   15.000000
                                                             3.000000
                3,000000
                                   40.000000
                                                             6.000000
max
       WorkLifeBalance
                          YearsAtCompany
                                           YearsInCurrentRole
            1470.000000
                             1470.000000
                                                   1470.000000
count
               2.761224
                                7.008163
                                                      4.229252
mean
std
               0.706476
                                6.126525
                                                      3.623137
                                0.000000
min
               1.000000
                                                      0.000000
25%
               2,000000
                                3.000000
                                                      2.000000
50%
               3.000000
                                5.000000
                                                      3.000000
75%
               3.000000
                                9.000000
                                                      7.000000
               4.000000
                               40.000000
                                                     18,000000
max
       YearsSinceLastPromotion
                                  YearsWithCurrManager
                    1470.000000
                                            1470.000000
count
mean
                        2.187755
                                               4.123129
std
                        3.222430
                                               3.568136
min
                        0.000000
                                               0.00000
25%
                        0.000000
                                               2,000000
50%
                        1.000000
                                               3,000000
75%
                        3,000000
                                               7.000000
                       15.000000
                                              17.000000
max
[8 rows x 26 columns]
df.duplicated()
0
        False
1
        False
2
        False
3
        False
4
        False
1465
        False
1466
        False
1467
        False
1468
        False
        False
1469
Length: 1470, dtype: bool
df.isnull()
                                           DailyRate
              Attrition
                          BusinessTravel
                                                       Department
        Age
0
      False
                  False
                                   False
                                               False
                                                             False
1
      False
                  False
                                   False
                                               False
                                                             False
2
      False
                  False
                                   False
                                               False
                                                             False
3
      False
                                   False
                                                             False
                  False
                                               False
4
      False
                  False
                                                             False
                                   False
                                               False
1465
      False
                  False
                                   False
                                               False
                                                             False
```

1466 1467	False False	False False		False False		False False		lse lse	
1468	False	False		False		False		lse	
1469	False	False		False		False		lse	
	DistanceFr		Education	n Educ	cation	Field	Employee	eCount	\
0		False	False			False		False	
1		False	False			False		False	
2		False	False			False		False	
1 2 3 4		False	False			False		False	
4		False	False	9		False		False	
1.465									
1465		False	False			False		False	
1466		False	False			False		False	
1467		False	False			False		False	
1468		False	False			False		False	
1469		False	False	3		False		False	
	EmployeeNu	mher	Relati	ionshir	Satis	faction	Standa	ardHours	s \
0		-1		101131111	,5ac15	False		False	_
1						False		False	
2						False		False	
0 1 2 3 4		alse .				False		False	
4		alse .				False		False	
1465						False		False	e
1466						False		False	
1467						False		False	
1468						False		False	
1469	F	alse .				False		False	9
	C+ockOn+io	nl ovol	TotalWorl	ri naVos	sec T	raining	Timoclad	s+Voor	\
0	StockOptio	False	TotalWork	Fa		гатптпу	TimesLas	False	\
0 1		False			lse			False	
		False			lse			False	
3		False		Fal				False	
2 3 4		False			lse			False	
1465		False			lse			False	
1466		False		Fal				False	
1467		False			lse			False	
1468		False		Fal	lse			False	
1469		False		Fal	lse			False	
		-	.,						
	WorkLifeBa		YearsAtCon		Years	InCurre		\	
0		False		alse			False		
0 1 2 3		False		alse			False		
2		False		alse			False		
4		False		alse			False False		
4		False		alse			raise		

1465 False 1466 False 1467 False 1468 False 1469 False		False False False False False False	False False False False False
YearsSinceLastProm 1 2 3 4 1465 1466 1467 1468 1469	ralse False False False False False False False False	YearsWithCurrMa	False
[1470 rows x 35 columns]			
df.isnull().sum()			
Age Attrition BusinessTravel DailyRate Department DistanceFromHome Education EducationField EmployeeCount EmployeeNumber EnvironmentSatisfaction Gender HourlyRate JobInvolvement JobLevel JobRole JobSatisfaction MaritalStatus MonthlyIncome MonthlyRate NumCompaniesWorked Over18 OverTime PercentSalaryHike PerformanceRating RelationshipSatisfaction	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		

```
StandardHours
                             0
StockOptionLevel
                             0
TotalWorkingYears
                             0
TrainingTimesLastYear
                             0
                             0
WorkLifeBalance
YearsAtCompany
                             0
YearsInCurrentRole
                             0
YearsSinceLastPromotion
                             0
YearsWithCurrManager
                             0
dtype: int64
```

DATA CLEANING

1. Deleting redundant columns

```
df.drop(columns=['EmployeeNumber'], inplace=True)
df
      Age Attrition
                         BusinessTravel
                                         DailyRate
Department \
0
       41
                Yes
                          Travel Rarely
                                               1102
Sales
       49
                 No
                     Travel Frequently
                                                279
                                                     Research &
Development
       37
                Yes
                          Travel Rarely
                                               1373
                                                     Research &
Development
                     Travel Frequently
                                               1392
                                                     Research &
       33
                 No
Development
       27
                 No
                          Travel Rarely
                                                591
                                                     Research &
Development
                 No Travel Frequently
                                                     Research &
1465
       36
                                                884
Development
                          Travel Rarely
1466
       39
                 No
                                                613
                                                     Research &
Development
                          Travel Rarely
1467
       27
                 No
                                                155
                                                     Research &
Development
1468
       49
                     Travel Frequently
                 No
                                               1023
Sales
1469
       34
                 No
                          Travel Rarely
                                                628
                                                     Research &
Development
      DistanceFromHome
                         Education EducationField
                                                    EmployeeCount \
0
                      1
                                   Life Sciences
                                                                 1
1
                                                                1
                     8
                                 1
                                   Life Sciences
2
                      2
                                 2
                                                                1
                                             0ther
3
                      3
                                                                1
                                 4
                                    Life Sciences
4
                      2
                                 1
                                          Medical
                                                                1
```

1465 1466 1467 1468 1469	23 6 4 2 8	 2 1 3 Li 3 3	Medical Medical fe Sciences Medical Medical	1 1 1 1 1
	EnvironmentSatisfaction	R⊖.	lationshinSatisf	action
Stand	ardHours \	111 110	cacionsnipsacist	action
0	2			1
80	2			4
1 80	3			4
2	4			2
80				
3	4			3
80 4	1			4
80	1			4
1465	3			3
80	4			1
1466 80	4			1
1467	2			2
80				
1468	4			4
80	2			1
1469 80	2			1
00				
Θ	StockOptionLevel Total 0	WorkingYo	ears TrainingTim 8	esLastYear \ 0
1	1		10	3
2	0		7	3 3 3
4	<u>0</u> 1		8 6	3
1465	1		17	3
1466	1		9	5
1467	1		6	0
1468 1469	0 0		17 6	5 0 3 3
1409	Ü		0	3
	WorkLifeBalance YearsAt		YearsInCurrentR	
0	1	6		4
1 2	3 3	10 0		7 0
3	3	8		7
_				

4 1465 1466 1467 1468	3 3 3 3 2	2 5 7 6 9	2 2 7 2 6
1469	4	4	3
0 1 2 3 4	YearsSinceLastPromotion 0 1 0 3 2	YearsWithCurrManager 5 7 0 0 2	
1465 1466 1467 1468 1469	0 1 0 0 0	3 7 3 8 2	
[1470	rows x 34 columns]		

2. Renaming the columns

```
new column_names = {
    'Education': 'EducationLevel',
    'EducationField': 'FieldOfEducation',
    'EnvironmentSatisfaction': 'EnvSatisfaction'
df.rename(columns=new_column_names, inplace=True)
df
     Age Attrition
                        BusinessTravel
                                        DailyRate
Department \
                         Travel_Rarely
       41
                Yes
                                             1102
Sales
       49
                    Travel_Frequently
                                              279
                                                   Research &
Development
       37
                Yes
                         Travel_Rarely
                                             1373
                                                   Research &
Development
       33
                 No Travel_Frequently
                                             1392
                                                   Research &
Development
       27
                 No
                         Travel Rarely
                                              591 Research &
Development
                 No Travel_Frequently
                                              884
                                                   Research &
1465
       36
Development
```

1466	39 opment	No	Travel_Rarely	613 Resea	arch &
1467	27	No	Travel_Rarely	155 Resea	arch &
1468	opment 49	No Tr	ravel_Frequently	1023	
Sales 1469 Devel	34 opment	No	Travel_Rarely	628 Resea	arch &
	Distanc	eFromHome	EducationLevel	FieldOfEducation	EmployeeCount
0		1	2	Life Sciences	1
1		8	1	Life Sciences	1
2		2	2	0ther	1
3		3	4	Life Sciences	1
4		2	1	Medical	1
1465		23	2	Medical	1
1466		6	1	Medical	1
1467		4	3	Life Sciences	1
1468		2	3	Medical	1
1469		8	3	Medical	1
	EnvSati	sfaction	Relationship	Satisfaction Sta	andardHours \
0 1		2 3		1 4	80 80
1 2 3 4		4		2 3	80 80
4		1		4	80
1465 1466		3		3	80 80
1467		2		2	80
1468 1469		4 2		4 1	80 80
0	Stock0p	tionLevel	TotalWorkingYea	ars TrainingTimesL	
0		0		8 10	0 3
2		0		7	3

3	0 1	8 6	3 3
1465 1466 1467 1468 1469	1 1 1 0 0	17 9 6 17 6	3 5 0 3 3
0 1 2 3 4 1465 1466 1467 1468 1469	WorkLifeBalance YearsAtCo	ompany YearsInCur 6 10 0 8 2 5 7 6 9	rentRole \
0 1 2 3 4 1465 1466 1467 1468 1469	YearsSinceLastPromotion	YearsWithCurrMana	ger 5 7 0 0 2 3 7 3 8 2
[1470	rows x 34 columns]		

3. Dropping duplicates

df.drop_duplicates(inplace=True)
df

	Age Attr	ition	BusinessTravel	DailyRate		
Depart						
0	41	Yes	Travel_Rarely	1102		
Sales						
1	49	No	Travel_Frequently	279	Research 8	لأ
Develo	pment					
2	37	Yes	Travel_Rarely	1373	Research 8	یدَ
Develo	pment					

3 Devel	33 opment	No T	ravel_Fre	quently	1392	Resea	rch &		
4	27	No	Travel _.	_Rarely	591	Resea	rch &		
	opment								
1465	36	No T	ravel_Fre	quently	884	Resea	rch &		
Develo	opment 39	No	Travel	Rarely	613	Resea	rch &		
Develo	opment 27	No	Travel	Rarely	155	Resea	rch &		
	opment 49		ravel_Fre	_ ′	1023	110000			
Sales			_			_			
1469 Devel	34 opment	No	Iravel	_Rarely	628	Kesea	rch &		
	Distance	eFromHome	Educati	onLevel	FieldOfEduc	ation	Employ	eeCoi	unt
0		1		2	Life Sci	.ences			1
1		8		1	Life Sci				1
2		2		2	22.0 002	Other			1
3		3		4	Life Sci				1
4		2		1	ME	dical			1
1465		23		2	Me	edical			1
1466		6		1	M∈	dical			1
1467		4		3	Life Sci	ences.			1
1468		2		3	M∈	dical			1
1469		8		3	Me	edical			1
	EnvSati	sfaction	Pol a	tionchin	Satisfactio	n C+a	ndardHo	urc	\
0	Ellysatt	2	Keta	стопѕптр	Satisfactio	1	iiuai uno	80	\
1 2 3 4		3 4				4 2		80 80	
3 4		4 1				3 4		80 80	
 1465						3		 80	

```
1466
                                                                           80
                                                           2
1467
                       2
                                                                           80
1468
                       4
                                                           4
                                                                           80
1469
                                                                           80
       StockOptionLevel
                            TotalWorkingYears TrainingTimesLastYear
0
                                                                         3
1
                         1
                                              10
2
                                                                         3
                        0
                                               7
3
                                                                         3
                        0
                                               8
4
                         1
                                                                         3
                                               6
1465
                         1
                                              17
                                                                         3
                                                                         5
1466
                         1
                                               9
                                                                         0
                         1
                                               6
1467
1468
                        0
                                              17
                                                                         3
1469
                        0
                                               6
       WorkLifeBalance YearsAtCompany
                                            YearsInCurrentRole
0
1
                       3
                                        10
                                                                 7
2
                       3
                                                                 0
                                         0
3
                       3
                                         8
                                                                 7
                       3
                                         2
                                                                 2
                                                                 2
1465
                       3
                                         5
                       3
                                         7
                                                                 7
1466
                                                                 2
1467
                       3
                                         6
1468
                       2
                                         9
                                                                 6
1469
                                         4
                                                                 3
       YearsSinceLastPromotion
                                    YearsWithCurrManager
0
                                                           7
1
                                 1
2
                                 0
                                                           0
3
                                 3
                                                           0
                                                           2
4
                                 2
1465
                                 0
                                                           3
                                                           7
1466
                                 1
                                                           3
                                 0
1467
                                                           8
1468
                                 0
1469
[1470 rows x 34 columns]
```

4. Cleaning individual columns

```
df['JobRole'] = df['JobRole'].str.lower()
```

5. Remove NaN values from the dataset

5. Remove NaN va	llues from the	dataset			
df.dropna(inp df	olace= <mark>True</mark>)			
Age Att Department \		BusinessTravel	DailyRate		
0 41	Yes	Travel_Rarely	1102		
Sales 1 49 Development	No T	ravel_Frequently	279	Research &	&
2 37	Yes	Travel_Rarely	1373	Research &	S.
Development 3 33 Development	No T	ravel_Frequently	1392	Research &	2
4 27 Development	No	Travel_Rarely	591	Research &	&
1465 36 Development	No T	ravel_Frequently	884	Research &	S.
1466 39	No	Travel_Rarely	613	Research &	S .
Development 1467 27	No	Travel_Rarely	155	Research &	&
Development 1468 49	No T	ravel_Frequently	1023		
Sales 1469 34	No	Travel_Rarely	628	Research a	S.
Development	so E rom Uomo	Education avai	EioldOfEduc	ation Emp	l avecCount
\	ceFromHome			•	loyeeCount
0	1	2	Life Sci	ences	1
1	8	1	Life Sci	ences	1
2	2	2		Other	1
3	3	4	Life Sci	ences	1
4	2	1	Me	dical	1
1465	23	2	Me	dical	1
1466	6	1	Me	dical	1
1467	4	3	Life Sci	ences	1
1468	2	3	Me	dical	1

1469	8	3	Medical	1
0 1 2 3 4 1465 1466 1467 1468 1469	EnvSatisfaction Revenue	lationshipSatisfact	ion StandardHours 1 80 4 80 2 80 3 80 4 80 3 80 1 80 2 80 4 80 1 80	
0 1 2 3 4 1465 1466 1467 1468 1469	StockOptionLevel Total O 1 O 1 1 1 1 1 0 0 0 0 0 0 0 0	WorkingYears Traini 8 10 7 8 6 17 9 6 17 6	ngTimesLastYear \ 0	
0 1 2 3 4 1465 1466 1467 1468 1469	WorkLifeBalance YearsAte 1 3 3 3 3 3 3 2 4			
0 1 2 3 4 	YearsSinceLastPromotion 0 1 0 3 2	YearsWithCurrMana	ger 5 7 0 0 2	

1466	1	7
1467	0	3
1468	0	8
1469	1	2
[1470 rows x 34 columns]		

6. Check for some more transformations

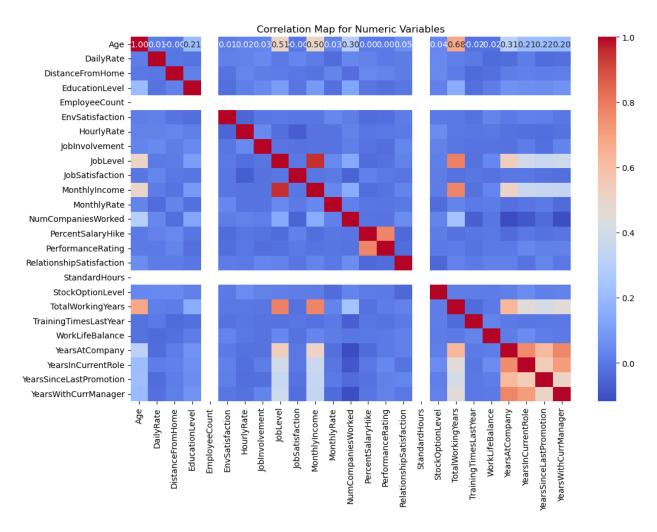
```
from sklearn.preprocessing import StandardScaler

scaler = StandardScaler()
numeric_columns = ['Age', 'TotalWorkingYears', 'MonthlyIncome']
df[numeric_columns] = scaler.fit_transform(df[numeric_columns])
```

DATA VISUALIZATION

1. Correlation map for all numeric variables:

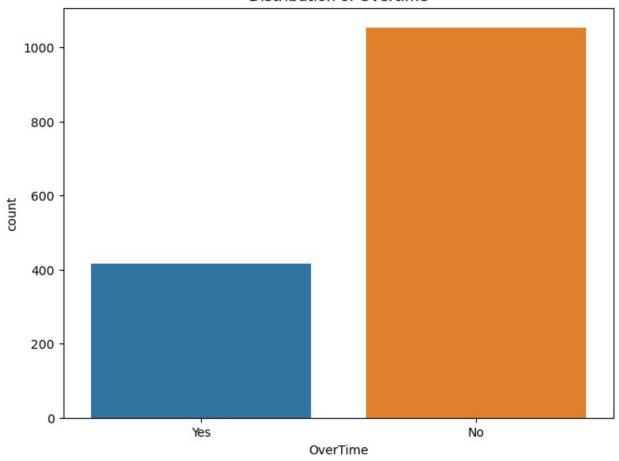
```
import seaborn as sns
import matplotlib.pyplot as plt
numeric_columns = df.select_dtypes(include=['int64', 'float64'])
correlation_matrix = numeric_columns.corr()
plt.figure(figsize=(12, 8))
sns.heatmap(correlation_matrix, annot=True, cmap='coolwarm', fmt=".2f")
plt.title('Correlation Map for Numeric Variables')
plt.show()
C:\Users\MSI\anaconda3\Lib\site-packages\seaborn\matrix.py:260:
FutureWarning: Format strings passed to MaskedConstant are ignored, but in future may error or produce different behavior
annotation = ("{:" + self.fmt + "}").format(val)
```



2. Overtime:

```
plt.figure(figsize=(8, 6))
sns.countplot(x='0verTime', data=df)
plt.title('Distribution of Overtime')
plt.show()
```

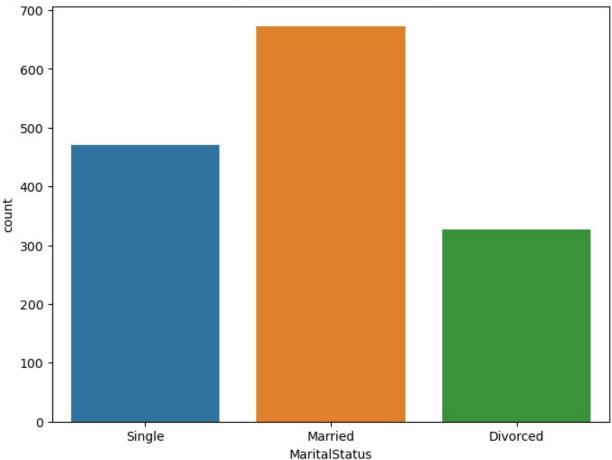
Distribution of Overtime



3. Marital Status:

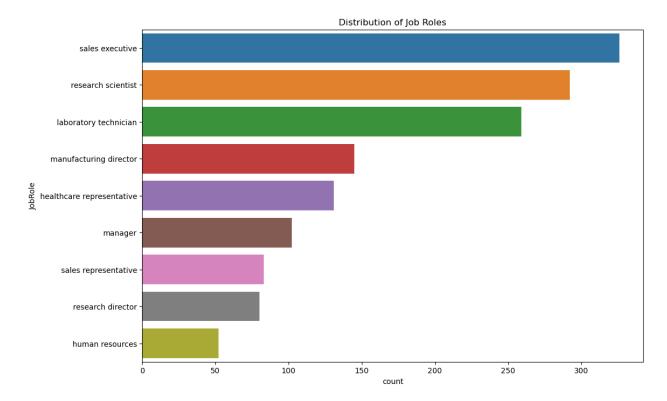
```
plt.figure(figsize=(8, 6))
sns.countplot(x='MaritalStatus', data=df)
plt.title('Marital Status Distribution')
plt.show()
```

Marital Status Distribution



4. Job Role

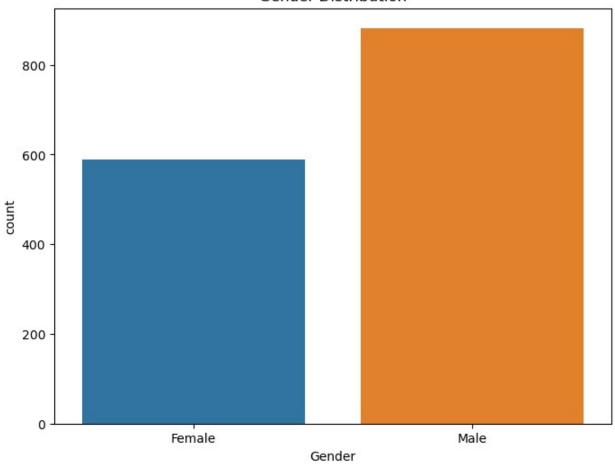
```
plt.figure(figsize=(12, 8))
sns.countplot(y='JobRole', data=df)
plt.title('Distribution of Job Roles')
plt.show()
```



5. Gender

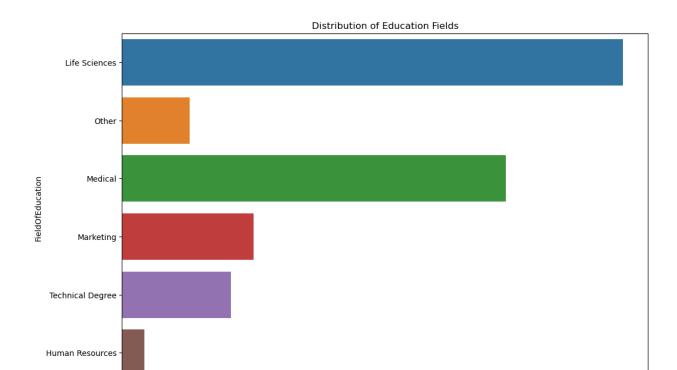
```
plt.figure(figsize=(8, 6))
sns.countplot(x='Gender', data=df)
plt.title('Gender Distribution')
plt.show()
```

Gender Distribution



6. Education Field

```
plt.figure(figsize=(12, 8))
sns.countplot(y='FieldOfEducation', data=df)
plt.title('Distribution of Education Fields')
plt.show()
```

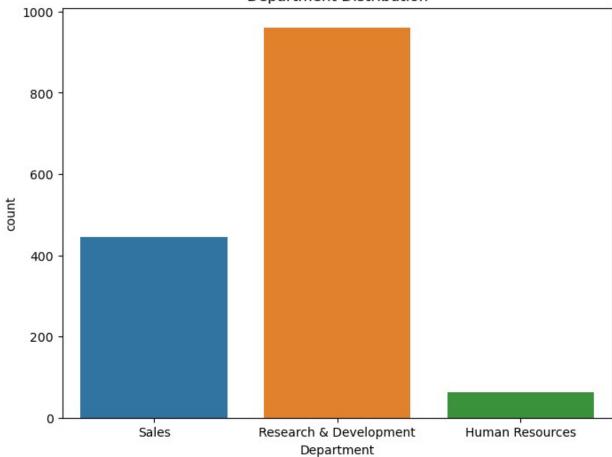


7. Department

```
plt.figure(figsize=(8, 6))
sns.countplot(x='Department', data=df)
plt.title('Department Distribution')
plt.show()
```

count

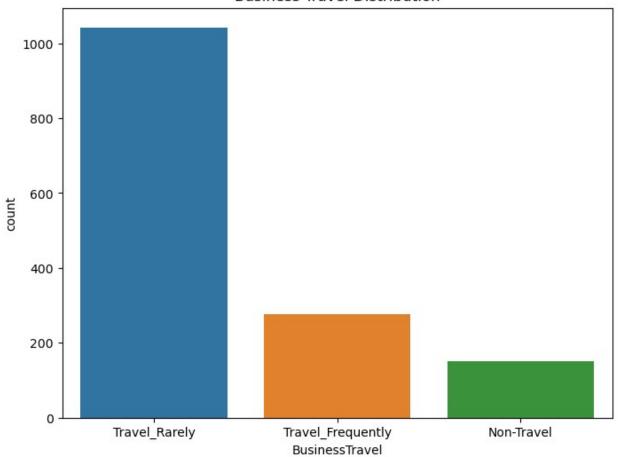




8. Business Travel

```
plt.figure(figsize=(8, 6))
sns.countplot(x='BusinessTravel', data=df)
plt.title('Business Travel Distribution')
plt.show()
```

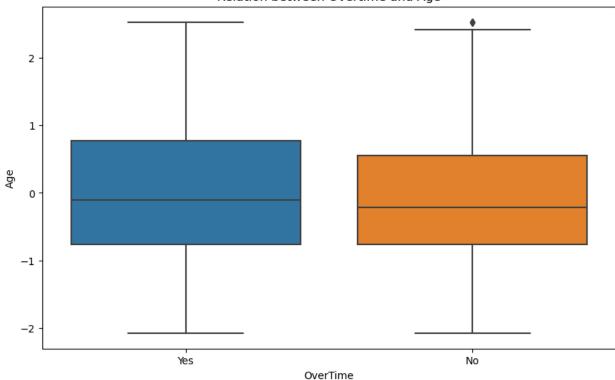
Business Travel Distribution



9. Relation between Overtime and Age

```
plt.figure(figsize=(10, 6))
sns.boxplot(x='OverTime', y='Age', data=df)
plt.title('Relation between Overtime and Age')
plt.show()
```

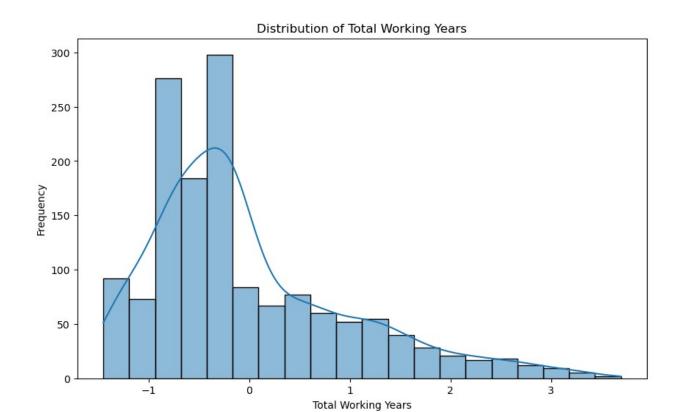




10. Total Working Years

```
plt.figure(figsize=(10, 6))
sns.histplot(df['TotalWorkingYears'], bins=20, kde=True)
plt.title('Distribution of Total Working Years')
plt.xlabel('Total Working Years')
plt.ylabel('Frequency')
plt.show()

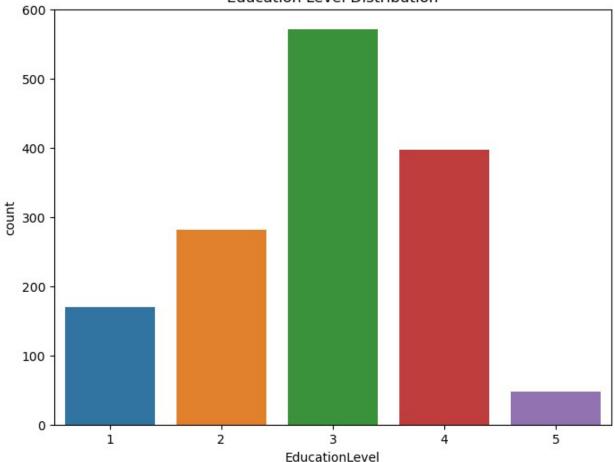
C:\Users\MSI\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.
   with pd.option_context('mode.use_inf_as_na', True):
```



11. Education Level

```
plt.figure(figsize=(8, 6))
sns.countplot(x='EducationLevel', data=df)
plt.title('Education Level Distribution')
plt.show()
```



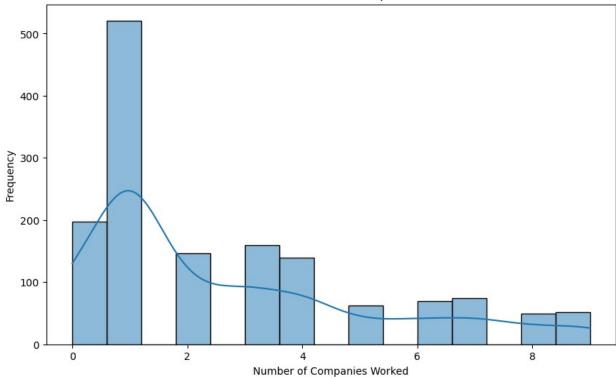


12. Number of Companies Worked

```
plt.figure(figsize=(10, 6))
sns.histplot(df['NumCompaniesWorked'], bins=15, kde=True)
plt.title('Distribution of Number of Companies Worked')
plt.xlabel('Number of Companies Worked')
plt.ylabel('Frequency')
plt.show()

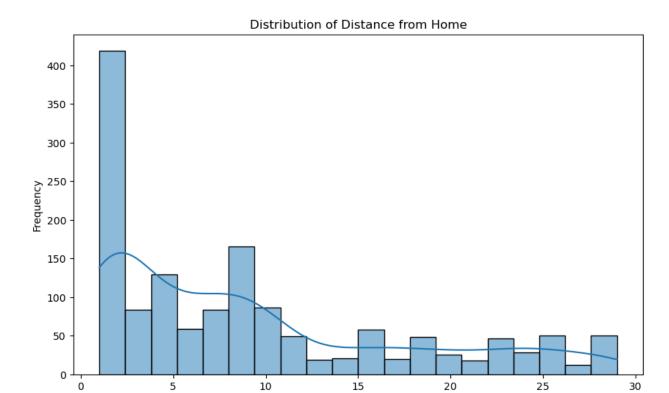
C:\Users\MSI\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.
   with pd.option_context('mode.use_inf_as_na', True):
```





13. Distance from Home

```
plt.figure(figsize=(10, 6))
sns.histplot(df['DistanceFromHome'], bins=20, kde=True)
plt.title('Distribution of Distance from Home')
plt.xlabel('Distance from Home')
plt.ylabel('Frequency')
plt.show()
C:\Users\MSI\anaconda3\Lib\site-packages\seaborn\ oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed
in a future version. Convert inf values to NaN before operating
instead.
 with pd.option context('mode.use inf as na', True):
```



Distance from Home