Python 3.9.12 (main, Apr 4 2022, 05:22:27) [MSC v.1916 64 bit (AMD64)] Type "copyright", "credits" or "license" for more information.

IPython 8.2.0 -- An enhanced Interactive Python.

In [1]:	'D:/ML_	LAB_K	AUSHIK/	untit	led0	. ру '		= 'D:	/ML_LA	AB_KAU	SHIK
	Product ID) Air te	empera	ture [K]	. То	orque	[Nm]	Too	ol wea	ar [mi	n]
0	M14860)		298.	1			42.8	3			0
1	L47181			298.	2			46.3	3			3
2	L47182	1		298.	1			49.4	Ļ			5
3	L47183	}		298.	2			39.5	5			7
4	L47184			298.				40.6				9
•											_	
9995	M24855			298.				29.5				14
9996	H39416			298.				31.8				17
9997	M24857	,		299.				33.4				22
9998	H39412			299.				48.5				25
9999	M24859			299.		•		40.2				30
2222	1124055	•		200.	• • • •	•		40.2	-			50
[1000	0 rows x 6	columns	:1									
[Product 1			ature [κ]	-	Torqu	e [Nn	11 Ta	ool we	ear [m	inl
0	1100000	2	.cpci	0.000	_	· •	-	00000	_	,	0.000	_
1		1		0.000				00549			0.000	
2		1				•						
				0.000		•		01098			0.000	
3		1		0.010	~=			02472			0.000	
4		1		0.010	8/ .	• •	0.	02747	' 3		0.000	000
	• •						_	05070				
9995		2		0.989				95879			0.972	
9996		0		0.989		• •		97115			0.972	
9997		2		0.989		• •		98351			0.972	
9998		0		0.989	13 .	• •	0.	99456	95		0.992	095
9999		2		1.000	00 .	•	1.	00000	90		1.000	900
[1000	[10000 rows x 6 columns]											
		duct ID		Air te	mperat			• • •	HDF	PWF	OSF	RNF
0	1	M14860	М			29	98.1		0	0	0	0
1	2	L47181	L			29	98.2		0	0	0	0
2	3	L47182	L			29	98.1		0	0	0	0
3	4	L47183	L			29	98.2		0	0	0	0
4	5	L47184	L			29	98.2		0	0	0	0
	• • •											
9995	9996	M24855	М			29	98.8		0	0	0	0
9996	9997	H39410	Н			29	98.9		0	0	0	0
9997	9998	M24857	М				99.0		0	0	0	0
9998	9999	H39412	Н				99.0		0	0	0	0
9999	10000	M24859	М				99.0		0	0	0	0
								• • •	·	•	Ū	·
[10000 rows x 14 columns]												
Product ID Air temperature [K] Torque [Nm] Tool wear [min]												
0	2	<u>.</u> . cemp		.00000	• • •		3.000	_	.001		0.0	
1	1			.00000	• • •		0.005				0.0	
2	1			.00000	• • •		0.003 0.010				0.0	
3					• • •							
_	1			.01087	• • •		0.024				0.0	
4	1		0	.01087	• • •	(ð.027	4/3			0.0	
[5 rows x 6 columns]												

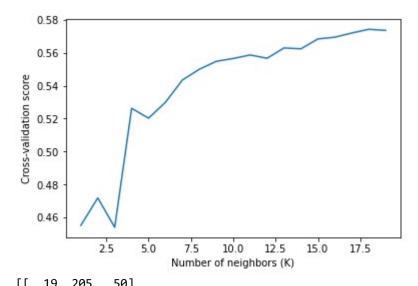
[5 rows x 6 columns]

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10000 entries, 0 to 9999
Data columns (total 6 columns):

#	Column	Non-Null Count	Dtype
0	Product ID	10000 non-null	int64
1	Air temperature [K]	10000 non-null	float64
2	Process temperature [K]	10000 non-null	float64
3	Rotational speed [rpm]	10000 non-null	float64
4	Torque [Nm]	10000 non-null	float64
5	Tool wear [min]	10000 non-null	float64
1.4	63 (-) (-)		

dtypes: float64(5), int64(1) memory usage: 468.9 KB
None

Accuracy: 0.5036



[19 205 [124 1115 [57 537	268] 125]]			
	precision	recall	f1-score	support
0	0.10	0.07	0.08	274
1	0.60	0.74	0.66	1507
2	0.28	0.17	0.22	719
accuracy			0.50	2500
macro avg	0.33	0.33	0.32	2500
weighted avg	0.45	0.50	0.47	2500

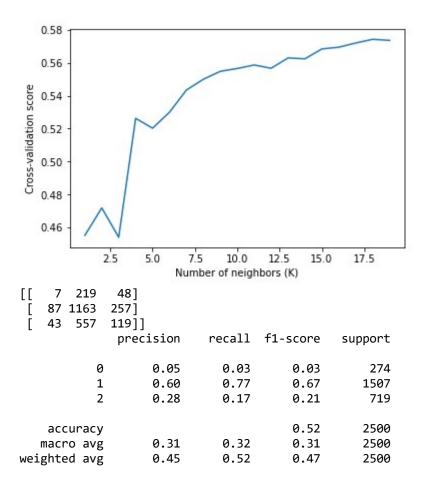
In [2]:	'D:/ML_LAB_KAUSHIK/un	ntitled	10.py'	=	D:/ML_LAB_F	KAUSHIK'
Product ID	Air temperature [K]		Torque [Nm]	Tool wear	[min]
0 M14860	298.1		4	2.8		0
1 L47181	298.2		4	6.3		3
2 L47182	298.1		4	9.4		5
3 L47183	298.2		3	9.5		7
4 L47184	298.2		4	0.0		9
• • • • • • • • • • • • • • • • • • • •	• • •	• • •				• • •
9995 M24855	298.8		2	9.5		14
9996 H39410	298.9		3	1.8		17
9997 M24857	299.0		3	3.4		22
9998 H39412	299.0		4	8.5		25
9999 M24859	299.0		4	0.2		30

```
[10000 rows x 6 columns]
      Product ID Air temperature [K]
                                                Torque [Nm]
                                                               Tool wear [min]
                                           . . .
0
                                 0.00000
                                                    0.000000
                                                                       0.000000
                2
                                           . . .
1
                1
                                 0.00000
                                                    0.005495
                                                                       0.000000
                                           . . .
2
                1
                                 0.00000
                                                    0.010989
                                                                       0.000000
                                           . . .
3
                1
                                 0.01087
                                                    0.024725
                                                                       0.000000
                                           . . .
4
                1
                                 0.01087
                                                    0.027473
                                                                       0.000000
                                           . . .
9995
                2
                                 0.98913
                                                    0.958791
                                                                       0.972332
9996
                0
                                 0.98913
                                                    0.971154
                                                                       0.972332
9997
                2
                                 0.98913
                                                    0.983516
                                                                       0.972332
                                           . . .
9998
                0
                                 0.98913
                                                    0.994505
                                                                       0.992095
9999
                2
                                 1.00000
                                                                       1.000000
                                                    1.000000
[10000 rows x 6 columns]
        UDI Product ID Type
                                Air temperature [K]
                                                             HDF
                                                                  PWF
                                                                        OSF
                                                                              RNF
0
                                                                     0
           1
                 M14860
                            Μ
                                                298.1
                                                               0
                                                                          0
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1
           2
                  L47181
                                                298.2
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                                                                          0
                                                                                0
                            L
                                                               0
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2
           3
                 L47182
                            L
                                                298.1
                                                               0
                                                                     0
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                                                       . . .
3
           4
                                                               0
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                                                                          0
                                                                                0
                  L47183
                            L
                                                298.2
                                                       . . .
           5
                                                                     0
4
                  L47184
                            L
                                                298.2
                                                               0
                                                                          0
                                                                                0
                                                       . . .
                     . . .
                                                  . . .
                                                        . . .
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9995
       9996
                                                298.8
                                                                                0
                 M24855
                                                               0
                                                                     0
                                                                          0
                            Μ
       9997
9996
                 H39410
                                                298.9
                                                                     0
                                                                          0
                                                                                0
                            Н
                                                               0
9997
       9998
                 M24857
                            Μ
                                                299.0
                                                               0
                                                                     0
                                                                          0
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                                                       . . .
9998
       9999
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                 H39412
                            Н
                                                299.0
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9999
      10000
                                                                     0
                                                                                0
                 M24859
                            Μ
                                                299.0
                                                               0
                                                                          0
[10000 rows x 14 columns]
   Product ID
               Air temperature [K]
                                             Torque [Nm]
                                                           Tool wear [min]
                                       . . .
0
             2
                              0.00000
                                                 0.000000
                                                                         0.0
                                        . . .
1
             1
                              0.00000
                                                 0.005495
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                                        . . .
2
             1
                              0.00000
                                                 0.010989
                                                                         0.0
                                        . . .
3
             1
                              0.01087
                                                 0.024725
                                                                         0.0
                                        . . .
4
             1
                              0.01087
                                                                         0.0
                                                 0.027473
[5 rows x 6 columns]
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10000 entries, 0 to 9999
Data columns (total 6 columns):
     Column
                                 Non-Null Count Dtype
---
                                 10000 non-null int64
 0
     Product ID
 1
     Air temperature [K]
                                 10000 non-null float64
     Process temperature [K]
                                 10000 non-null
                                                   float64
 2
                                 10000 non-null
                                                   float64
 3
     Rotational speed [rpm]
 4
     Torque [Nm]
                                 10000 non-null
                                                   float64
 5
     Tool wear [min]
                                 10000 non-null
                                                   float64
dtypes: float64(5), int64(1)
memory usage: 468.9 KB
```

None

Accuracy: 0.5156

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In [3]: