NAME : **ARNOLD A. MAGALONA**
SCHOOL : St. Paul University Surigao

FINAL PROJECT

In [23]:
```
import matplotlib.pyplot as plt
import seaborn as sns
import pandas as pd
import pickle
import numpy as np

from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder, StandardScaler
from sklearn.neighbors import KNeighborsClassifier
from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import accuracy_score, classification_report, confusion_matrix
```

In [24]:
```
df = pd.read_csv('Survey_data.csv', encoding='latin1')
```

In [25]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 36 entries, 0 to 35
Data columns (total 15 columns):
 #   Column
Non-Null Count  Dtype
---  ------
--------------  -----
 0   No
36 non-null     int64
 1   Email Address
36 non-null     object
 2   Age
36 non-null     int64
 3   Gender
36 non-null     object
 4   Year
36 non-null     int64
 5   1.  What course are you currently enrolled in?
36 non-null     object
 6   2.  Did you choose to study IT on your own, or were you influenced by someone e
lse?                        36 non-null     object
 7   3.  On a scale from 1 to 5, how satisfied are you with your current course?
36 non-null     int64
 8   4.  What factors influenced your decision to pursue your current course?
36 non-null     object
 9    5. If you were given a chance, would you switch to a different course?
36 non-null     object
 10  6.  How involved were your parents in your decision to choose your course?
36 non-null     object
 11   7. Did your parents encourage you to pursue a specific career or course?
36 non-null     object
 12  8.  What is your parents approximate monthly income?
35 non-null     object
 13  9. If you were pressured to take up IT, how did it affect your performance and
interest in the course?    34 non-null     object
 14  10. What would be your preferred course if you were not influenced by others?
33 non-null     object
dtypes: int64(4), object(11)
memory usage: 4.3+ KB
```

In [26]:
```
df.describe()
```

Out[26]:

	No	Age	Year	3. On a scale from 1 to 5, how satisfied are you with your current course?
count	36.000000	36.000000	36.000000	36.000000
mean	18.500000	20.888889	3.027778	3.694444
std	10.535654	1.545090	0.844685	1.064208
min	1.000000	18.000000	1.000000	1.000000
25%	9.750000	20.000000	3.000000	3.000000
50%	18.500000	21.000000	3.000000	4.000000
75%	27.250000	21.250000	4.000000	4.250000
max	36.000000	26.000000	4.000000	5.000000

In [27]:
```
print(df.head())
```

```
   No               Email Address  Age  Gender  Year  \
0   1       kikingwidi1@gmail.com   19    Male     2
1   2  ronnikkoperigo12@gmail.com   20    Male     3
2   3  mackenzievilleza@gmail.com   22    Male     4
3   4    leahgenille122@gmail.com   21  Female     2
4   5    phaemalisangco@gmail.com   19  Female     2

  1.  What course are you currently enrolled in?   \
0                                          BSIT
1                                          BSIT
2                                          BSIT
3                                          BSIT
4                                          BSIT

  2.  Did you choose to study IT on your own, or were you influenced by someone els
e?   \
0                                   Chose on my own
1                                   Chose on my own
2                                   Chose on my own
3                                   Chose on my own
4                             Influenced by parents

   3.  On a scale from 1 to 5, how satisfied are you with your current course?   \
0                                                 4
1                                                 3
2                                                 4
3                                                 5
4                                                 3

  4.  What factors influenced your decision to pursue your current course?   \
0                                  Job opportunities
1                                  Job opportunities
2                                 Job opportunities
3                                  Job opportunities
4                                  Job opportunities

   5. If you were given a chance, would you switch to a different course?    \
0                                                  No
1                                                  No
2                                                 Yes
3                                                 Yes
4                                                 Yes

  6.  How involved were your parents in your decision to choose your course?    \
0                                 Somewhat involved
1                                 Somewhat involved
2                                 Somewhat involved
3                                 Somewhat involved
4                                     Very involved

   7. Did your parents encourage you to pursue a specific career or course?    \
0                                          Neutral
1                                          Neutral
2                                              Yes
3                                              Yes
4                                              Yes

  8.  What is your parents approximate monthly income?   \
0                                    9,000-18,000
1                                  18,100 - 25,000
2                                    9,000-18,000
3                                   I don't know
4                                  25,100 - 35,000

  9. If you were pressured to take up IT, how did it affect your performance and int
erest in the course?    \
0    To take the opportunities given to this course
1                                  Nothing at all
2  It affects my performance well since nakakasab...
3                            influence own my own
4  It made me influenced to take up IT by my pare...

  10. What would be your preferred course if you were not influenced by others?
```

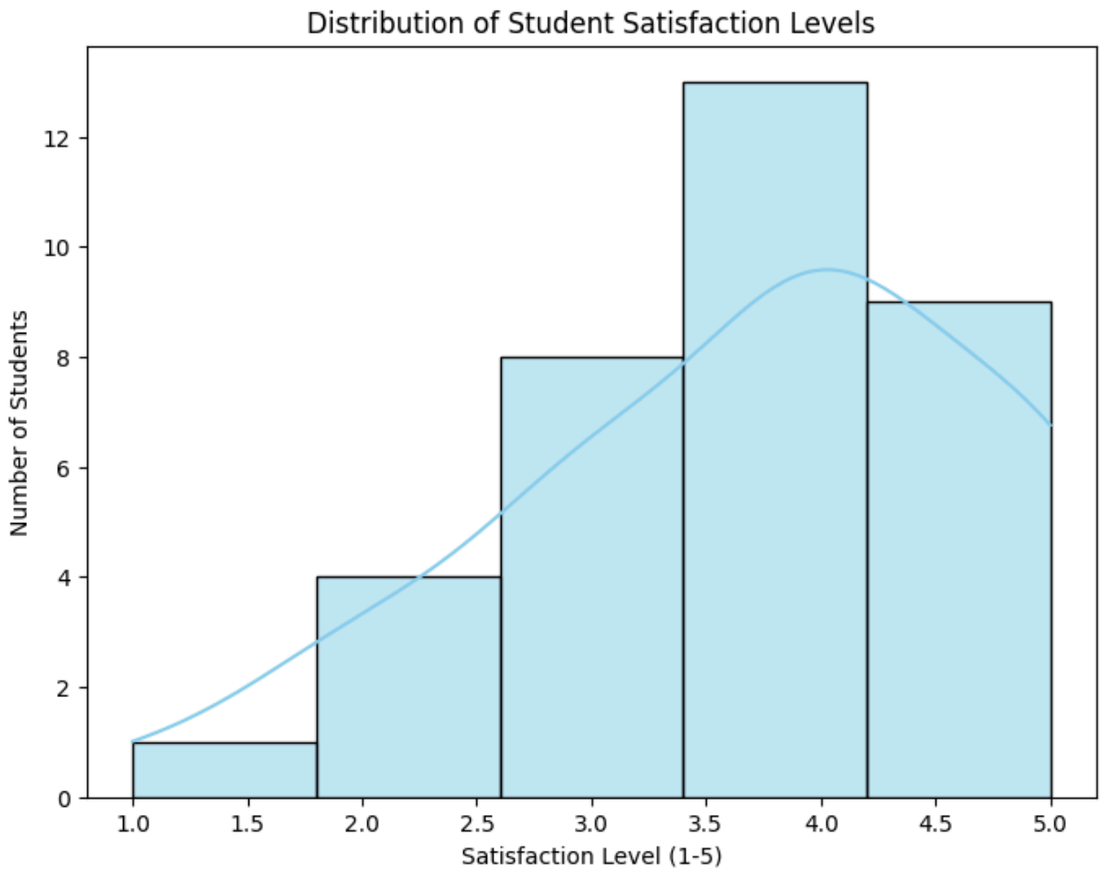
```
0                                                   NaN
1                                It would be maritime
2                                  Civil Engineering
3                                              BSCRIM
4                                                BSN
```

In [28]:
```
print(df.columns)
```

```
Index(['No', 'Email Address', 'Age', 'Gender', 'Year',
       '1.  What course are you currently enrolled in? ',
       '2.  Did you choose to study IT on your own, or were you influenced by someon
e else? ',
       '3.  On a scale from 1 to 5, how satisfied are you with your current course?
',
       '4.  What factors influenced your decision to pursue your current course? ',
       ' 5. If you were given a chance, would you switch to a different course?  ',
       '6.  How involved were your parents in your decision to choose your course?
',
       ' 7. Did your parents encourage you to pursue a specific career or course?
',
       '8.  What is your parents approximate monthly income? ',
       '9. If you were pressured to take up IT, how did it affect your performance a
nd interest in the course?  ',
       '10. What would be your preferred course if you were not influenced by other
s? '],
      dtype='object')
```

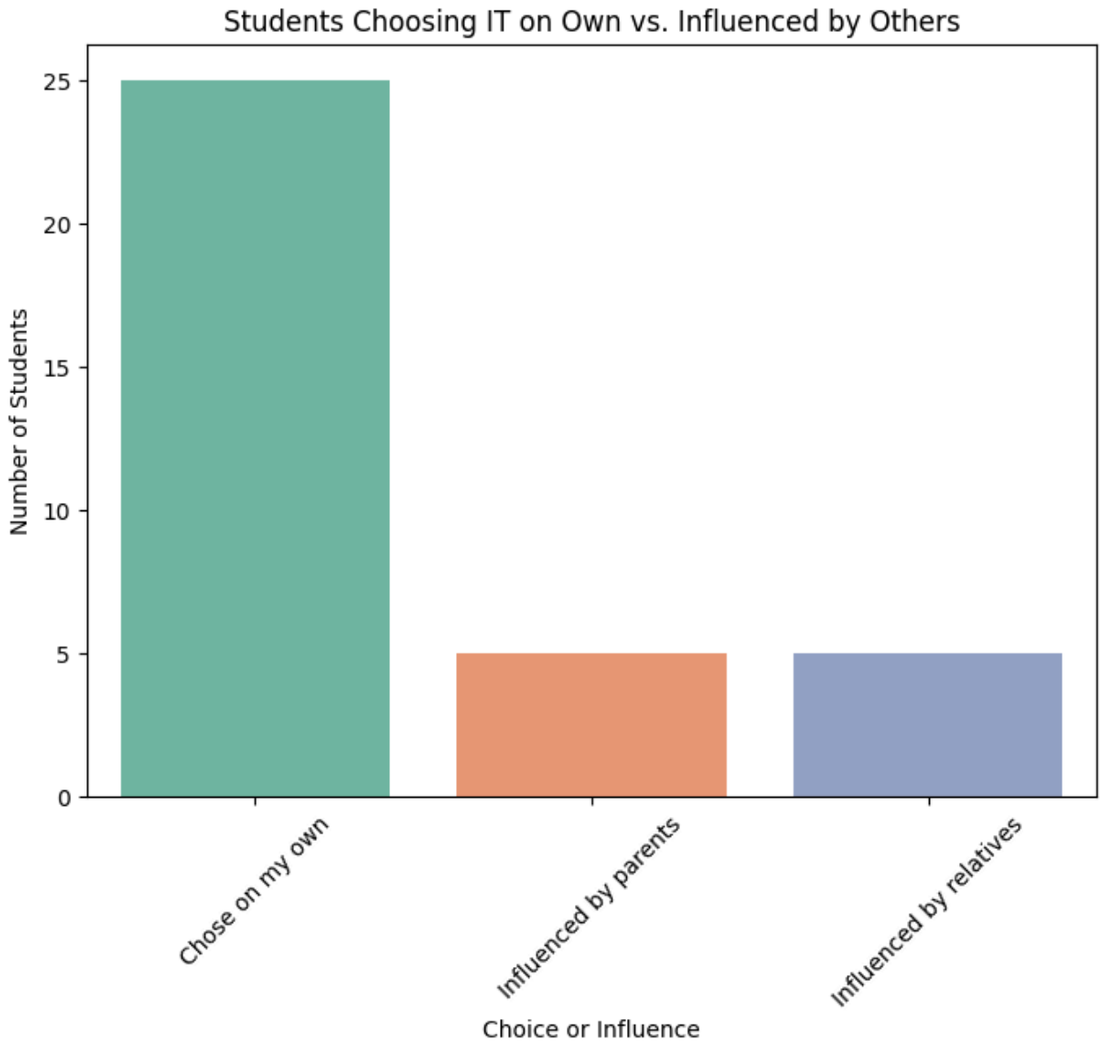
In [29]:
```
#Data Wrangling

df.dropna(subset=['2.  Did you choose to study IT on your own, or were you influenc
                  '3.  On a scale from 1 to 5, how satisfied are you with your curr
                  '8.  What is your parents approximate monthly income? '], inplace
```

In [30]:
```
#Univariate Histogram Plot
plt.figure(figsize=(8, 6))
sns.histplot(df['3.  On a scale from 1 to 5, how satisfied are you with your curren
plt.title('Distribution of Student Satisfaction Levels')
plt.xlabel('Satisfaction Level (1-5)')
plt.ylabel('Number of Students')
plt.show()
```

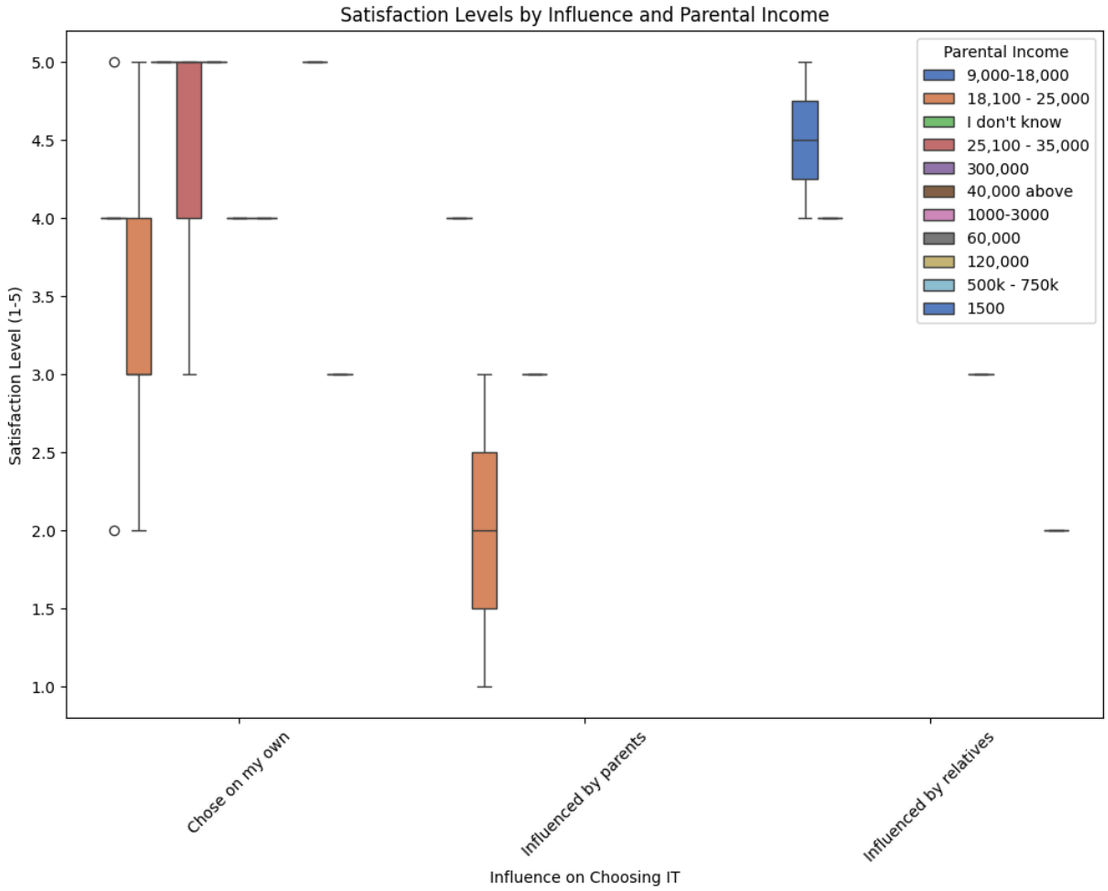


In [35]:
```
plt.figure(figsize=(8, 6))
sns.countplot(
    x='2.  Did you choose to study IT on your own, or were you influenced by someon
```

```
    hue='2.  Did you choose to study IT on your own, or were you influenced by some
    data=df,
    palette='Set2',
    dodge=False
)
plt.title('Students Choosing IT on Own vs. Influenced by Others')
plt.xlabel('Choice or Influence')
plt.ylabel('Number of Students')
plt.xticks(rotation=45)
plt.legend([], [], frameon=False)
plt.show()
```



In [32]:
```
#Multivariate Box Plot
plt.figure(figsize=(12, 8))
sns.boxplot(x='2.  Did you choose to study IT on your own, or were you influenced b
            y='3.  On a scale from 1 to 5, how satisfied are you with your current
            hue='8.  What is your parents approximate monthly income? ',
            data=df, palette='muted')
plt.title('Satisfaction Levels by Influence and Parental Income')
plt.xlabel('Influence on Choosing IT')
plt.ylabel('Satisfaction Level (1-5)')
plt.xticks(rotation=45)
plt.legend(title='Parental Income')
plt.show()
```

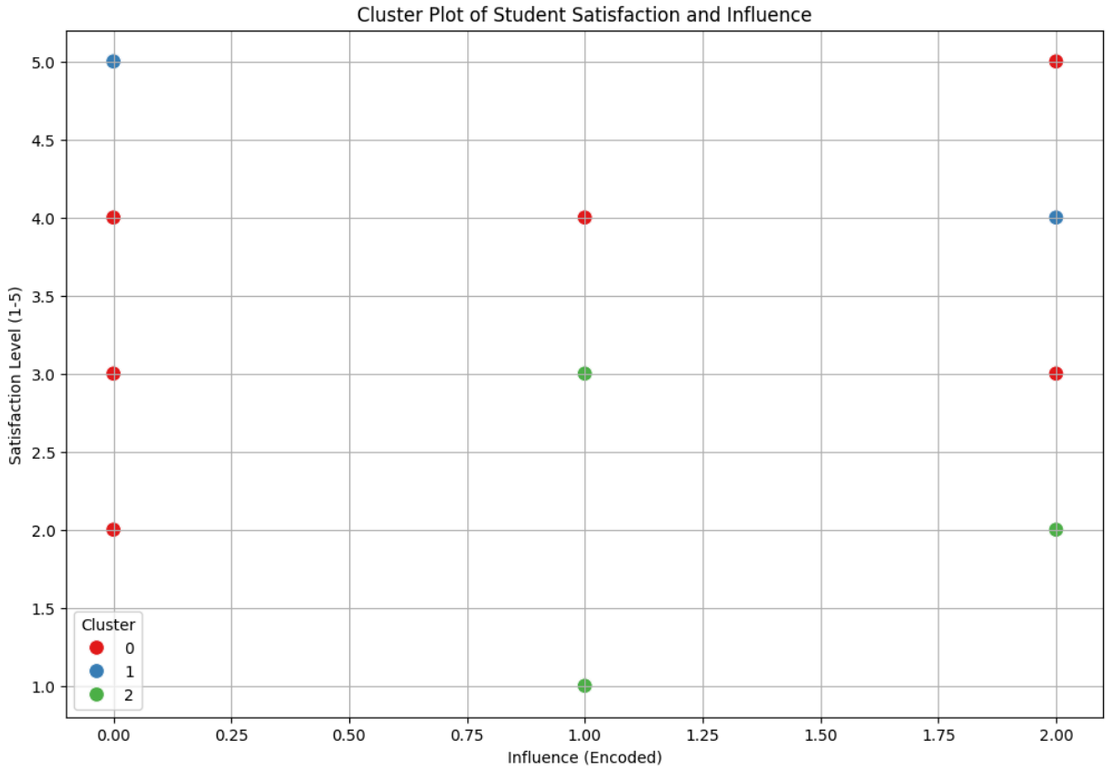


In [33]:
```
from sklearn.preprocessing import LabelEncoder
from sklearn.cluster import KMeans
```

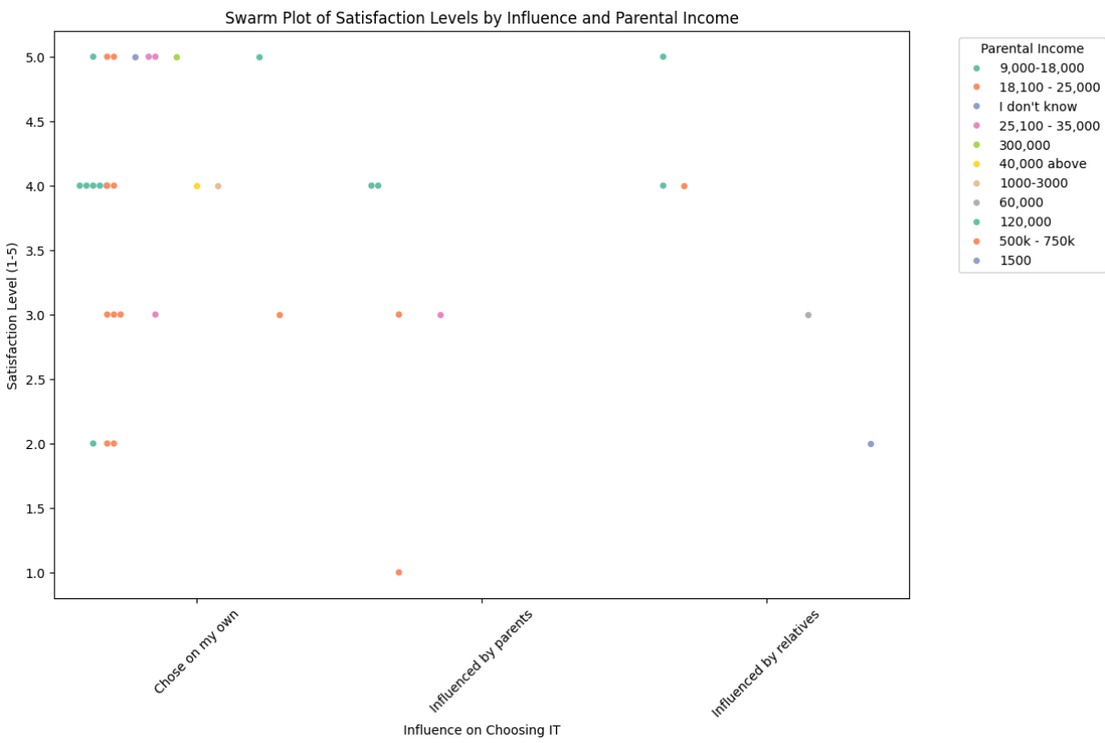
In [36]:
```
#Data Preparation for Clustering
#Convert categorical variables to numerical values using Label Encoding
le_influence = LabelEncoder()
le_income = LabelEncoder()

df['Influence'] = le_influence.fit_transform(df['2.  Did you choose to study IT on
df['Income'] = le_income.fit_transform(df['8.  What is your parents approximate mon

#Select features for clustering
X = df[['3.  On a scale from 1 to 5, how satisfied are you with your current course
```

In [37]:
```
#Apply K-Means Clustering
kmeans = KMeans(n_clusters=3, random_state=42)  # Number of clusters can be adjuste
df['Cluster'] = kmeans.fit_predict(X)
```

In [41]:
```
#Cluster Plot
plt.figure(figsize=(12, 8))
sns.scatterplot(x='Influence', y='3.  On a scale from 1 to 5, how satisfied are you
                hue='Cluster', data=df, palette='Set1', s=100)
plt.title('Cluster Plot of Student Satisfaction and Influence')
plt.xlabel('Influence (Encoded)')
plt.ylabel('Satisfaction Level (1-5)')
plt.legend(title='Cluster')
plt.grid(True)
plt.show()
```



In [40]:
```
#Swarm Plot
plt.figure(figsize=(12, 8))
sns.swarmplot(x='2.  Did you choose to study IT on your own, or were you influenced
              y='3.  On a scale from 1 to 5, how satisfied are you with your curren
              hue='8.  What is your parents approximate monthly income? ',
              data=df, palette='Set2', dodge=True)
plt.title('Swarm Plot of Satisfaction Levels by Influence and Parental Income')
plt.xlabel('Influence on Choosing IT')
plt.ylabel('Satisfaction Level (1-5)')
plt.xticks(rotation=45)
plt.legend(title='Parental Income', bbox_to_anchor=(1.05, 1), loc=2)
plt.show()
```



In [ ]: