2. Import Important Libraries

In [5]:
```
pip install pyodbc
```

```
Collecting pyodbc
  Downloading pyodbc-5.2.0-cp312-cp312-win_amd64.whl.metadata (2.8 kB)
Downloading pyodbc-5.2.0-cp312-cp312-win_amd64.whl (69 kB)
Installing collected packages: pyodbc
Successfully installed pyodbc-5.2.0
Note: you may need to restart the kernel to use updated packages.
```

In [7]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn  as sns
import pyodbc
```

2. Connect to SQL database

In [11]:
```
# Define connection paramters
server = 'DESKTOP-U507UFU'
database = 'PRACTICE1'


# Create the connection string (Trusted Windows Authentication)
conn_str = (
       "Driver={SQL Server};"
    f"Server={server};"
    f"Database={database};"
    "Trusted_Connection=yes;"
)

#Establish Connection
conn = pyodbc.connect(conn_str)
```

3. Running Query and read data into DataFrame

In [12]:
```
query = """
SELECT e1.department_id, e1.first_name, e1.last_name, department_name, e1.salary FROM
                insurance_employees e1
        WHERE e1.salary > (
                                                SELECT
                                                        AVG(e2.salary) As Avg_salary
                                                        FROM insurance_employees e2
                                                        WHERE e2.department_id = e1.department_id
                                                        )
        ORDER BY
          e1.salary DESC;

"""
df = pd.read_sql(query, conn)
conn.close()
```

```
C:\Users\User\AppData\Local\Temp\ipykernel_17700\4119250790.py:14: UserWarning: pandas only supports SQLAlchemy conne
ctable (engine/connection) or database string URI or sqlite3 DBAPI2 connection. Other DBAPI2 objects are not tested.
Please consider using SQLAlchemy.
  df = pd.read_sql(query, conn)
```

4. Testing Results (From the Query)

In [14]:
```
df.head()
#Employees Above the Average salary threshold
```

Out[14]:

	department_id	first_name	last_name	department_name	salary
0	106	David	Jackson	Finance	118294.34
1	104	Richard	Johnson	Sales	117068.78
2	103	Linda	Gonzalez	Customer Service	115977.87
3	104	Jennifer	Gonzalez	Sales	113704.34
4	106	Linda	Miller	Finance	113671.42

In [15]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 23 entries, 0 to 22
Data columns (total 5 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   department_id    23 non-null     int64
 1   first_name       23 non-null     object
 2   last_name        23 non-null     object
 3   department_name  23 non-null     object
 4   salary           23 non-null     float64
dtypes: float64(1), int64(1), object(3)
memory usage: 1.0+ KB
```

In [16]:
```python
df.shape
```

Out[16]: (23, 5)

4. Visualizing trends (High Income Earners)

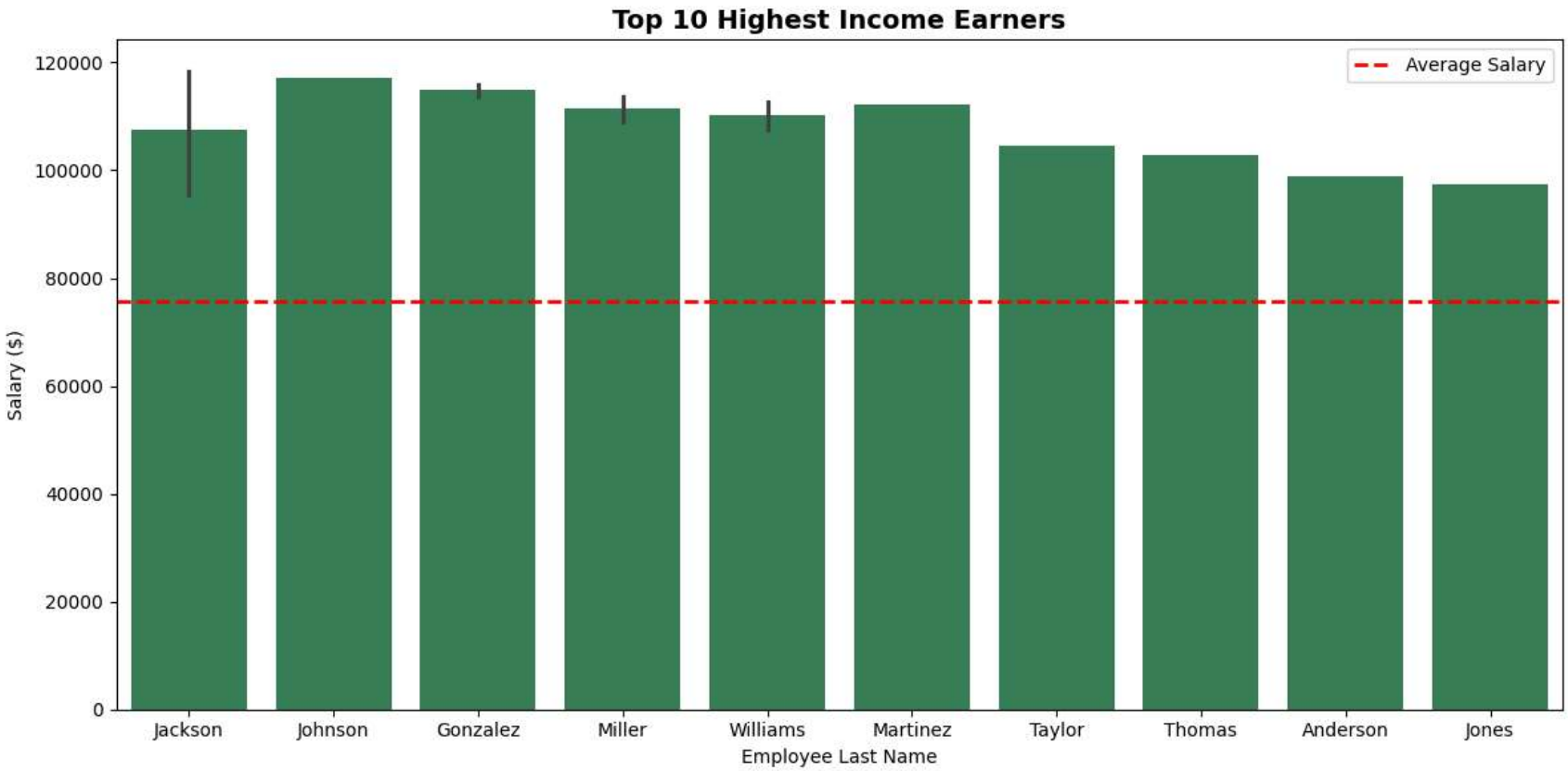
In [30]:
```python
# --- Sort and get top 15 earners ---
top_earners = df.sort_values(by="salary", ascending=False).head(15)

# --- Create bar chart ---
plt.figure(figsize=(12, 6))
sns.barplot(
    data=top_earners,
    x="last_name",
    y="salary",
    color="seagreen"
)

# --- Add red dotted line for average salary ---
average_salary = 75776.940600
plt.axhline(y=average_salary, color='red', linestyle='--', linewidth=2, label='Average Salary')

# --- Customize plot ---
plt.title("Top 10 Highest Income Earners", fontsize=14, fontweight='bold')
plt.xlabel("Employee Last Name")
plt.ylabel("Salary ($)")
plt.legend()
plt.tight_layout()
```

```
# --- Save and Display plot ---
plt.savefig("Highest_earners.png", dpi=300, bbox_inches='tight')
plt.show()
```



5. Locating Image

In [31]:
```
import os
print(os.getcwd())
```

```
C:\Windows\system32\1033\Insurance_Company
```

In [ ]: