Instructions on how to compile and run this code:

To Adjust as per Input text file size, Below data should be adjusted.

For 10 size, both should be 10. Same for other files.

```
// Constants for array sizes (can be adjusted)
const int MAX_POINTS = 10000;  // Adjust this to the maximum number of points
const int MAX_NEIGHBORS = 10000;  // Adjust for the maximum neighbors
```

To set the number of threads

Can be changed to 1, 2, 4, 8, 16, 32 threads as per needed.

```
std::counting_semaphore<16> thread_limiter(16);  // Limit to concurrent threads
```

Input file name

File name can be changed here.

```
std::ifstream file("data_10000.txt");
```

To change DBSCAN parameters

```
// Run DBSCAN with specified epsilon and MinPts
dbscan(2.5, 2);  // Adjust epsilon (radius) and MinPts (minimum points) for DBSCAN
```

Steps to Build and Run Your C++ Project in Visual Studio:

1. **Open the Project:**
   - **Open Visual Studio and load your project or solution (`.sln`).**
2. **Ensure Input File Placement:**
   - **Place your input file (`data_10.txt`) in the same directory as the C++ source file.**
3. **Build the Solution:**
   - **Click Build > Build Solution or press Ctrl + Shift + B.**
4. **Run Without Debugging:**
   - **Click Debug > Start Without Debugging or press Ctrl + F5.**
   - **The terminal will pop up, and the output file will be generated in the same directory as the input file.**