Assignment No. 10

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Programme:

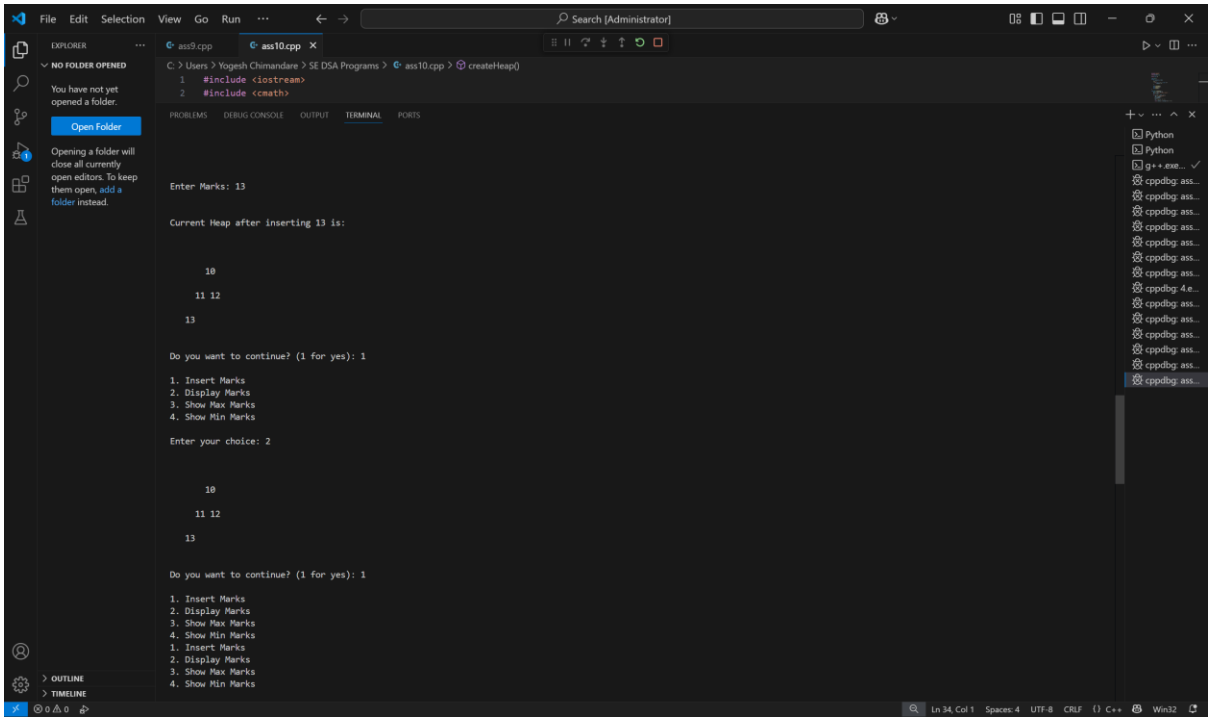
```
#include <iostream>
#include <cmath>
using namespace std;

#define max1 20

class stud {
public:
   int marks[max1], total;

   stud() {
      for (int i = 0; i < max1; i++)
         marks[i] = 0;
   }

   void createHeap();
   void displayHeap();
   void showmax();
   void showmin();
};

void stud::createHeap() {
   int i, j, par, temp, M;
   cout << "\nEnter how many students: ";
   cin >> total;
```

```
    for (i = 0; i < total; i++) {
        cout << "\nEnter Marks: ";
        cin >> marks[i];
        M = marks[i];
        j = i;
        par = floor((j - 1) / 2);

        while (marks[j] < marks[par] && j != 0) {
            temp = marks[j];
            marks[j] = marks[par];
            marks[par] = temp;
            j = par;
            par = floor((j - 1) / 2);
        }

        cout << "\n\nCurrent Heap after inserting " << M << " is:\n";
        displayHeap();
    }
}

void stud::displayHeap() {
    int i = 0, space = 6;
    cout << endl;
    while (i < total) {
        if (i == 0 || i == 1 || i == 3 || i == 7 || i == 15) {
            cout << endl << endl;
            for (int j = 0; j < space; j++)
                cout << " ";
            space -= 2;
        }
        cout << " " << marks[i];
        i++;
```

```
    }
    cout << endl << endl;
}

void stud::showmin() {
    cout << "Minimum marks: " << marks[0] << endl;
}

void stud::showmax() {
    int max = marks[0];
    for (int i = 1; i < total; i++) {
        if (max < marks[i])
            max = marks[i];
    }
    cout << "Maximum marks: " << max << endl;
}

int main() {
    stud s1;
    int ch, ans;
    do {
        cout << "\n1. Insert Marks";
        cout << "\n2. Display Marks";
        cout << "\n3. Show Max Marks";
        cout << "\n4. Show Min Marks";

        cout << "\n\nEnter your choice: ";
        cin >> ch;

        switch (ch) {
        case 1:
            s1.createHeap();
            break;
```

```
        case 2:
            s1.displayHeap();
            break;
        case 3:
            s1.showmax();
            break;
        case 4:
            s1.showmin();
            break;
        default:
            cout << "Invalid choice.\n";
        }

        cout << "\nDo you want to continue? (1 for yes): ";
        cin >> ans;
    } while (ans == 1);

    return 0;
}
```

Output:


File Edit Selection View Go Run
Search [Administrator]
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
Opening a folder will close all currently open editors. To keep them open, add a folder instead.
ass9.cpp
ass10.cpp
C: > Users > Yogesh Chimandare > SE DSA Programs > ass10.cpp > createHeap()
1 #include <iostream>
2 #include <cmath>
PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL PORTS
Enter Marks: 13
Current Heap after inserting 13 is:
10
11 12
13
Do you want to continue? (1 for yes): 1
1. Insert Marks
2. Display Marks
3. Show Max Marks
4. Show Min Marks
Enter your choice: 2
10
11 12
13
Do you want to continue? (1 for yes): 1
1. Insert Marks
2. Display Marks
3. Show Max Marks
4. Show Min Marks
1. Insert Marks
2. Display Marks
3. Show Max Marks
4. Show Min Marks
Python
Python
g++.exe...
cppdbg: ass...
cppdbg: 4.e...
OUTLINE
TIMELINE
Ln 34, Col 1 Spaces: 4 UTF-8 CRLF C++ Win32