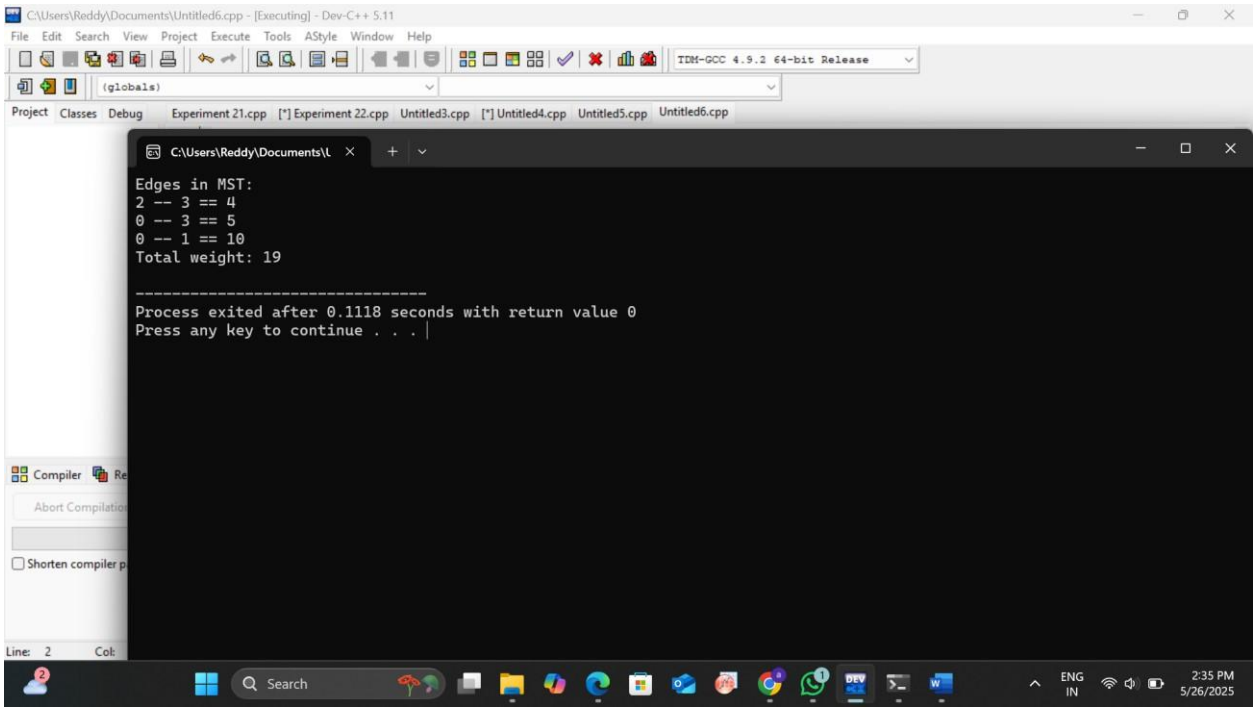
Kruskal

Code:

```
#include <stdio.h>
#include <stdlib.h>
struct Edge {     int src,
dest, weight;
};
struct Subset {
int       parent;
int rank;
};
int compare(const void* a, const void* b) {     return ((struct
Edge*)a)->weight - ((struct Edge*)b)->weight;
}
int find(struct Subset subsets[], int i) {     if
(subsets[i].parent != i)        subsets[i].parent =
find(subsets, subsets[i].parent);     return
subsets[i].parent;
}
void Union(struct Subset subsets[], int x, int y) {
int xroot = find(subsets, x);     int yroot =
find(subsets, y);     if (subsets[xroot].rank <
subsets[yroot].rank)        subsets[xroot].parent =
yroot;     else if (subsets[xroot].rank >
subsets[yroot].rank)        subsets[yroot].parent =
xroot;
```

```
   else {        subsets[yroot].parent
= xroot;
subsets[xroot].rank++;

   }
}
void KruskalMST(struct Edge edges[], int V, int E) {
struct Edge result[V];  // Store MST     int e = 0;
int i = 0;
   qsort(edges, E, sizeof(edges[0]), compare);     struct Subset* subsets =
(struct Subset*) malloc(V * sizeof(struct Subset));     for (int v = 0; v < V; v++)
{        subsets[v].parent = v;        subsets[v].rank = 0;
   }
   while (e < V - 1 && i < E) {
struct Edge next = edges[i++];
int x = find(subsets, next.src);
int y = find(subsets, next.dest);
      if (x != y) {
result[e++] = next;
         Union(subsets, x, y);
      }
   }
   printf("Edges in MST:\n");
int totalWeight = 0;
   for (i = 0; i < e; i++) {        printf("%d -- %d == %d\n", result[i].src,
result[i].dest, result[i].weight);        totalWeight += result[i].weight;
   }
   printf("Total weight: %d\n", totalWeight);
free(subsets);
```

```
}
int main() {
   int V = 4;      int E = 5;
struct Edge edges[] = {
       {0, 1, 10},
       {0, 2, 6},
       {0, 3, 5},
       {1, 3, 15},
       {2, 3, 4}
   };
   KruskalMST(edges, V, E);
return 0;
}
```