Experiment No: 5

Fractional Knapsack

CODE :

```
#include <stdio.h>

void fractionalKnapsack(int capacity, int no_items, int weights[], int values[]) {
    float total_value = 0.0;
    int i, j, item;
    float ratio[no_items];
    for (i = 0; i < no_items; i++) {
        ratio[i] = (float)values[i] / weights[i];
    }
    for (i = 0; i < no_items; i++) {
        for (j = i + 1; j < no_items; j++) {
            if (ratio[i] < ratio[j]) {
                float tempRatio = ratio[i];
                ratio[i] = ratio[j];
                ratio[j] = tempRatio;
                int tempWeight = weights[i];
                weights[i] = weights[j];
                weights[j] = tempWeight;
                int tempValue = values[i];
                values[i] = values[j];
                values[j] = tempValue;
            }
        }
    }
```

```
    for (i = 0; i < no_items && capacity > 0; i++) {
        if (weights[i] <= capacity) {
            capacity -= weights[i];
            total_value += values[i];
        } else {
            total_value += ratio[i] * capacity;
            capacity = 0; // The knapsack is full
        }
    }

    printf("Maximum value achievable: %.2f\n", total_value);
}
int main() {
    int capacity = 50; // Example capacity
    int weights[] = {10, 20, 30}; // Example weights
    int values[] = {60, 100, 120}; // Example values
    int no_items = sizeof(values) / sizeof(values[0]);
    fractionalKnapsack(capacity, no_items, weights, values);
    return 0;
}
```

OUTPUT:

Output

```
/tmp/jDla1LThko.o
Maximum value achievable: 240.00


=== Code Execution Successful ===
```