```cpp
#include "equation.h"
using namespace std;

equation::equation()
{
    begin = NULL;
    length = 0;

}

void equation::insertitem(nodetype x)
{
    nodetype* t;
    t = new nodetype;
    *t = x;
    t->next = NULL;
    if (begin == NULL)
    {
        begin = t;
        last = t;
    }
    else
    {
        last->next = t;
        last = t;

    }
    nodetype* y = begin;
    while (y != NULL)
    {
        if (y->exp < t->exp)
        {
            length = t->exp;
            t->exp = y->exp;
            y->exp = length;
            length = t->coeff;
            t->coeff = y->coeff;
            y->coeff = length;
        }
        y = y->next;
    }
}

void equation::printlist(ofstream& outputfile)
{
    nodetype* t = begin;
    while (t != NULL)
    {
        outputfile << t->coeff << "x" << t->exp;
```

```
50          if (t->next != NULL)
51          {
52              if(t->next->coeff > 0)
53                  {
54                      outputfile << "+";
55                  }
56          }
57          t = t->next;
58      }
59
60  }
61
62  void equation::add(equation e2, ofstream& outputfile)
63  {
64      nodetype* t = begin;
65      nodetype* p = e2.begin;
66      while (t != NULL || p!= NULL)
67      {
68          if (t->exp == p->exp)
69          {
70              t->coeff = t->coeff + p->coeff;
71              outputfile << t->coeff << "x" << t->exp;
72              t = t->next;
73              p = p->next;
74              if (t != NULL && p != NULL)
75              {
76                  if (t->coeff + p->coeff >= 0 && t->exp == p->exp)
77                  {
78                      outputfile << "+";
79                  }
80                  else if (t != NULL && p != NULL && t->exp > p->exp)
81                  {
82                      if (t->coeff >= 0)
83                          outputfile << "+";
84                  }
85                  else if (t != NULL && p != NULL && t->exp < p->exp)
86                  {
87                      if (p->coeff >= 0)
88                          outputfile << "+";
89                  }
90              }
91          }
92          if (p == NULL && t!=NULL)
93          {
94              outputfile << t->coeff << "x" << t->exp;
95              if (t->next != NULL)
96              {
97                  if (t->next->coeff >= 0)
98                  {
```

```
 99                      outputfile << "+";
100                  }
101              }
102              t = t->next;
103          }
104          if (t == NULL && p!=NULL)
105          {
106              outputfile << p->coeff << "x" << p->exp;
107              if (p->next != NULL)
108              {
109                  if (p->next->coeff >= 0)
110                  {
111                      outputfile << "+";
112                  }
113              }
114              p = p->next;
115          }
116          if (t != NULL && p != NULL && t->exp < p->exp)
117          {
118              outputfile << p->coeff << "x" << p->exp;
119              p = p->next;
120              if (p != NULL)
121              {
122                  while (p->exp > t->exp)
123                  {
124                      outputfile << t->coeff << "x" << t->exp;
125                      p = p->next;
126                  }
127                  if (p->coeff + t->coeff >= 0 && p->exp == t->exp)
128                  {
129                      outputfile << "+";
130                  }
131              }
132          }
133      if (t != NULL && p != NULL && t->exp > p->exp)
134          {
135              outputfile << t->coeff << "x" << t->exp;
136              t = t->next;
137              if (t != NULL)
138              {
139                  while (t->exp > p->exp)
140                  {
141                      outputfile << t->coeff << "x" << t->exp;
142                      t = t->next;
143                  }
144                  if (t->coeff + p->coeff >= 0 && t->exp == p->exp)
145                  {
146                      outputfile << "+";
147                  }
```

```
148             }
149
150         }
151
152     }
153 }
154
155
156
157
```