Transition matrix and emission matrix:

```
double trans_prob[3][3] = {
   { 0.8, 0.15, 0.05 },
   { 0.2, 0.5, 0.3 },
   { 0.2, 0.2, 0.6 }
};
double emis_prob[2][3] = {
   { 0.9, 0.7, 0.2 },
   { 0.1, 0.3, 0.8 }
};
```

Initialize:

```
pred[0][0] = 0.5 * emis_prob[coat[0]][0];
pred[1][0] = 0.25 * emis_prob[coat[0]][1];
pred[2][0] = 0.25 * emis_prob[coat[0]][2];
```

Iteration:

```
for (int i = 1; i < n; i++) {
   for (int j = 0; j < 3; j++) {
      for (int k = 0; k < 3; k++) {
         double r = pred[k][i - 1] * trans_prob[k][j] * emis_prob[coat[i]][j];
         if ( r >= pred[j][i]) {
            pred[j][i] = r;
            from[j][i] = k;
         }
      }
   }
}
```

pred[j][i] is the rate of the weather j in the day i.
from[j][i] is for printing the whole chain.