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// Supplementary Data 1.pdf

#define LENGTH 10000

#define MAX 30000

#define MOTIF 10


#include <stdio.h>

#include <string.h>


void main (void)

{

        FILE *fin, *fout;

        char seq[LENGTH], result[MAX][MOTIF] = {{'\0',},}, temp[MOTIF];

        int size, i, j, k, l = 0, match, cnt[MAX] = {0,}, num, route, sort;

        float freq[MAX];


        printf("Size of Window = ");

        scanf("%d", &size);


        fin = fopen("input.txt", "r");

        fgets(seq, LENGTH, fin);

        fclose(fin);


        for(i = 0; seq[i + size] != '\0'; i++) {

                route = 0;

                for(j = 0; j < l; j++) {
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                match = 0;
                for(k = 0; k < size; k++) {
                        if(seq[i + k] != result[j][k])    break;
                        else        match++;
                }

                if(match == size)  {
                        route = 1;
                        break;
                }
        }

if(route == 0) {
                num = 0;
                for(j = 0; seq[j + size] != '\0'; j++) {
                        match = 0;
                        for(k = 0; k < size; k++) {
                                if(seq[i + k] != seq[j + k])     break;
                                else        match++;
                        }

                        if(match == size)  num++;
                }

                if(num > 1) {
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                                cnt[l] = num;
                                for(k = 0; k < size; k++)
                                        result[l][k] = seq[i + k];
                                l++;
                        }
                }
        }

        for(i = 0; i < l; i++) {
                for(j = i + 1; j < l; j++) {
                        if(cnt[i] < cnt[j]) {
                                for(k = 0; k < size; k++) {
                                        temp[k] = result[i][k];
                                        result[i][k] = result[j][k];
                                        result[j][k] = temp[k];
                                }
                                sort = cnt[i];
                                cnt[i] = cnt[j];
                                cnt[j] = sort;
                        }
                }
        }

        fout = fopen("output.txt", "w");
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	fprintf(fout, "Sequence length = %d\n", strlen(seq));


	fprintf(fout, "TOP 30s in %d results found!\n\n", l);


	if(l > 30) l = 30;


	for(i = 0; i < l; i++) {
		freq[i] = ((float)cnt[i]/strlen(seq)) * 100;
		fprintf(fout, "%s\t%.3f\n", result[i], (double)freq[i]);
	}


	fclose(fout);
}
```