

```

1  /*****
2  */
3  /* A sample solution for labwork 2.
4  */
5  */
6  *****/
7
8  /* Include libraries */
9  #include <stdio.h>
10 #include <math.h>
11
12 /* Macro definition for PI */
13 #define PI 3.14159265
14
15 int main()
16 {
17     /* Variable decleration */
18     int n;
19     double result;
20     FILE * inputFile, * outputFile;
21
22     /* Open files */
23     inputFile = fopen("input.txt", "r");
24     outputFile = fopen("output.txt", "w");
25
26     /* Read an input value (n) from input file */
27     fscanf(inputFile, "%d", &n);
28     /* Compute factorial */
29     result = pow((double)n, n) * exp((double)-n) * sqrt(2 * PI * n + 1.0 / 3.0);
30     /* Print factorial result to output file */
31     fprintf(outputFile, "%2d! equals approximately %16.2f.\n", n, result);
32
33     fscanf(inputFile, "%d", &n);
34     result = pow((double)n, n) * exp((double)-n) * sqrt(2 * PI * n + 1.0 / 3.0);
35     fprintf(outputFile, "%2d! equals approximately %16.2f.\n", n, result);
36
37     fscanf(inputFile, "%d", &n);
38     result = pow((double)n, n) * exp((double)-n) * sqrt(2 * PI * n + 1.0 / 3.0);
39     fprintf(outputFile, "%2d! equals approximately %16.2f.\n", n, result);
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41     fscanf(inputFile, "%d", &n);
42     result = pow((double)n, n) * exp((double)-n) * sqrt(2 * PI * n + 1.0 / 3.0);
43     fprintf(outputFile, "%2d! equals approximately %16.2f.\n", n, result);
44
45     fscanf(inputFile, "%d", &n);
46     result = pow((double)n, n) * exp((double)-n) * sqrt(2 * PI * n + 1.0 / 3.0);
47     fprintf(outputFile, "%2d! equals approximately %16.2f.\n", n, result);
48
49     /* Close files */
50     fclose(inputFile);
51     fclose(outputFile);
52
53     return 0; /* return 0 indicates that everything is okay */
54 }

```