A industrial cleaning solvent has been spilled into a river 2km upstream of the drinking water abstraction point for the town of Lakeland. The solvent decays (is oxidized) in the water, and the concentration at any time after the spill can be computed using the first-order decay equation

\[ c_t = c_0 e^{-k_T t} \]

where

\[ c_0 = \text{initial concentration (mg/l)} \]
\[ c_t = \text{concentration at time } t \text{ (mg/l)} \]
\[ t = \text{travel time downstream (days)} \]
\[ k_T = \text{first order decay rate at temperature } T \text{ (1/days)} \]
\[ = k_{20} \theta T - 20 \]
\[ k_{20} = \text{first order decay rate at 20C (1/days)} \]
\[ T = \text{water temperature (degrees C)} \]
\[ \theta = \text{temperature effect coefficient} \]

Write a program that can be used to determine the concentration of the solvent at the abstraction point. The program should ask the user where the date data is to come from, with the choices being the keyboard or a file. If the user specifies a file, ask the user for the file name and read the data from that source. The program should also ask the user where they want the output to go, with the choices being either the screen or an output file. The program should then ask the user for the initial solvent concentration \( c_0 \), the river velocity, the water temperature \( T \), the first order decay rate at 20C \( k_{20} \), and the temperature correction coefficient \( \theta \). If any of these numbers is negative, the program should write out an error message and stop. Otherwise, it should compute and output the travel time to the abstraction point, and then compute and output the expected solvent concentration at that point. Try out your program for \( c_0 = 73 \), a river velocity of 0.5 m/sec, \( T = 13C \), \( k_{20} = 0.21 \) (day\(^{-1}\)), and \( \theta = 1.08 \).