Technion – Israel Institute of Technology

Intro to Systems Programming

Assignment 3 – Templates

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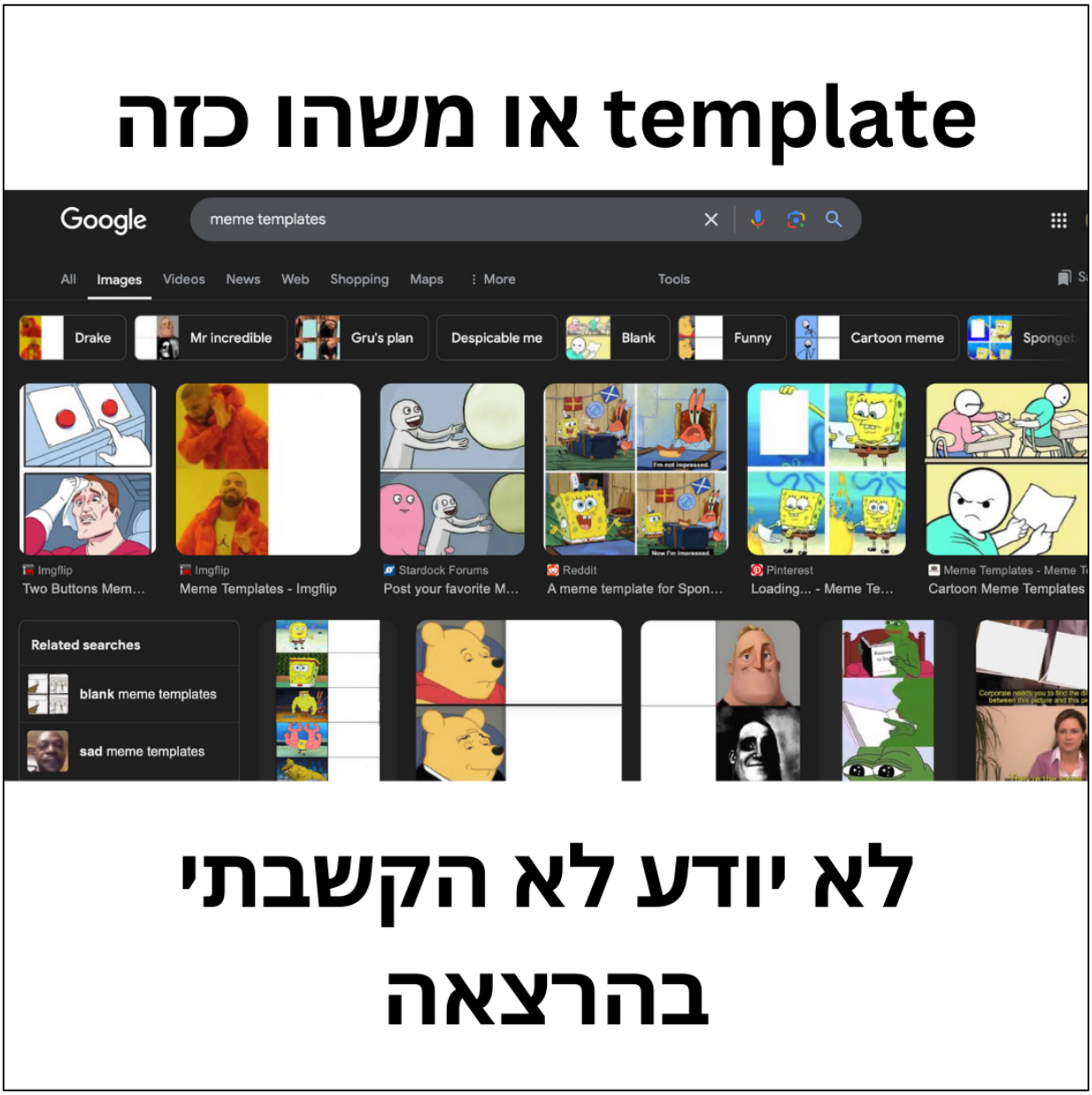
Meme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Dry

1. Conditions that the generic object T has to achieve to be useable by SortedList:
    a. **Overloading the comparason operator (>) :** this operator is required since SortedList needs a way to compare between different objects of type T. The sorting mechanism of SortedList depends on this operator. Other comparasonoperators <, >=, <= also work, however the code for SortedList has to be modified to support these operators.
        ➔ Task object's assignment operator has been overloaded.
    b. **Default constructor:** the object has to have a default constructor since it is used within the default constructor of the SortedList. If no default constructor is available for T the program will run into compilation errors.
        ➔ Task object uses the compiler generated defalut constructor.
    c. **Copy constructor:** the copy constructor of SortedList assumes that there is a copy constructor for T. If no copy constructor is available for T the program might behave in an unexpected manner.
        ➔ Task object uses the compiler generated copy constructor.
2. Implementing a non-constant iterator for SortedList causes problems in the sorting mechanism. Since the different elements of the list can now be changed by the iterator (such as by using operator* which returns a reference to the object saved in a specific node), manually changing the value ("data" field) of any single element causes the list to become unsorted. Thus the purpose of having a sorted list is lost.
3. The desired functionality can be implemented using the filter function in SortedList. This can be achieved by using a lambda function. For example:

    ```
    [denominator] (int numerator) -> <int> {return numerator % denominator == 0}
    ```

    Note that a functor can also be used instead of a lambda function.