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Home work #5

Problem 1. Currency converter.

- The solution to this problem is provided within **"problem_1.f"** file, which is located inside the ***fullsimple*** checker's folder.

Problem 2. GCD function implementation.

- The solution to this problem is provided within **"problem_2.f"** file, which is located inside the ***fullsimple*** checker's folder.
- I've implemented GCD function in two ways:
  - **[gcd]** - by using the *modulo operator*, where the *division by zero* is handled with a special type called **OptionalNat**, that is it returns *<none=unit>* in case of an error and it returns *<some=x>* in case of a successful division
  - **[gcd2]** - by using the *minus operator*, where no error handling is needed

Problem 3. List implementation (reverse list).

- Unfortunately, it is impossible to implement a list within the ***fullsimple*** checker. To be more precise, in our extended language we can't define something in terms of itself. Therefore, we need to introduce some new notation that will allow us to do that. Refer to *Chapter-20* to see that notation (it is called **Rec,** which is kind of like **fix** but for types). And actually there is already implemented list inside a checker called ***fullequirec***.
- **Bonus:* The solution to this problem (reverse list function implementation) is provided within **"problem_3.f"** file, which is located inside the ***fullequirec*** checker's folder.

Problem 4.

- The solution to this problem is provided within **"core.ml"** file, which is located inside the ***letexercise*** checker's folder. The following rules were used to perform the task:

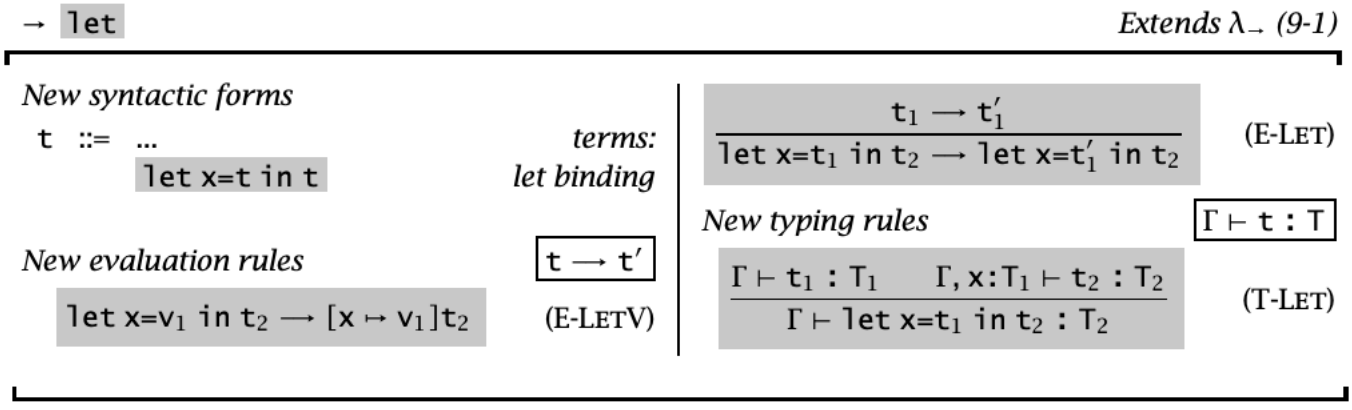

Figure 11-4: Let binding