

**CSU 396 Programming Languages Lab**  
**Practice problem on Typed Arithmetic Expressions**

1. Extend the Language of *Typed Arithmetic Expressions* to add “pair” with necessary operations – extract first element and extract second element of a pair. The pair is built up from values. Also, these values must be of same type. Design the system by adding the new terms , new evaluation rules , and new typing rules.

**Note:** The type system for the new language should not violate the properties of Uniqueness of Types and Type Safety.