

CS421 HW05

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Problem 1.

```
type bool_exp =  
  | Variable of string  
  | Constant of bool  
  | Negation of bool_exp  
  | Conjunction of bool_exp * bool_exp  
  | Disjunction of bool_exp * bool_exp  
;;
```

So, for example, $(a \wedge b) \vee \neg T$ is

```
let e = Disjunction(Conjunction(Var("a"), Var("b")), Negation(Constant(true)))
```

```
let rec bool_exp_eval e env =  
  match e with  
  | Variable x -> List.assoc x env  
  | Constant c -> c  
  | Negation a -> not(bool_exp_eval a env)  
  | Conjunction(a, b) -> (bool_exp_eval a env) && (bool_exp_eval b env)  
  | Disjunction(a, b) -> (bool_exp_eval a env) || (bool_exp_eval b env)  
;;
```