Софтверски Квалитет и Тестирање

Лабораториска вежба 3

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```
/**
 * Calculates the adjusted interest rate based on borrower and loan characteristics.
 *
 * @param creditScore Borrower's credit score
 * @param isFirstTimeBorrower Whether this is the borrower's first loan
 * @param loanAmount Loan amount in EUR
 * @param yearsEmployed Number of years employed
 * @return Adjusted interest rate (as a %)
 */
public static double calculateAdjustedInterestRate(int creditScore,
                                                   boolean isFirstTimeBorrower,
                                                   double loanAmount,
                                                   int yearsEmployed) {
    if ((yearsEmployed > 3 && loanAmount<= 10000 && !isFirstTimeBorrower) || (loanAmount >
10000 && creditScore > 700)) {
        return 3.5 + (loanAmount / 10000);  // lower base + scale with amount
    } else {
        return 6.5 + (loanAmount / 5000);   // higher base + scale with amount
    }
}
```

1. Предикати и клаузули

- *Го разгледуваме if-от:* ((yearsEmployed > 3 && loanAmount<= 10000 &&
  !isFirstTimeBorrower) || (loanAmount > 10000 && creditScore > 700))

- *Клаузули:*
  C1: yearsEmployed > 3
  C2: loanAmount <= 10000
  C3: !isFirstTimeBorrower
  ¬C2 : loanAmount > 10000
  C4: creditScore > 700

- *Предикат*: P= (C1 ∧ C2 ∧ C3) ∨ (¬C2 ∧ C4)

2. Таблица на вистинитост

Num	C1	C2	C3	C4	P	PC1	PC2	PC3	PC4
1.	T	T	T	T	T	T		T	
2.	T	T	T	F	T	T	T	T	
3.	T	T	F	T	F		T	T	
4.	T	T	F	F	F			T	
5.	T	F	T	T	T				T
6.	T	F	T	F	F		T		T
7.	T	F	F	T	T		T		T
8.	T	F	F	F	F				T
9.	F	T	T	T	F	T	T		
10.	F	T	T	F	F	T			
11.	F	T	F	T	F		T		
12.	F	T	F	F	F				
13.	F	F	T	T	T		T		T
14.	F	F	T	F	F				T
15.	F	F	F	T	T		T		T
16.	F	F	F	F	F				T

3. TR за GACC и CACC

a) GACC (General Active Clause Coverage):

• C1 (1, 9)
Ред 1: (T, T, T, T) → P=T
Ред 9: (F, T, T, T) → P=F

• C2 (2, 6)
Ред 2: (T, T, T, F) → P=T
Ред 6: (T, F, T, F) → P=F

• C3 (1, 3)
Ред 1: (T, T, T, T) → P=T
Ред 3: (T, T, F, T) → P=F

• C4 (5, 6)
Ред 5: (T, F, T, T) → P=T
Ред 6: (T, F, T, F) → P=F

b) CACC (Correlated Active Clause Coverage):

• C1 (1, 9)
Ред 1: (T, T, T, T) → P=T
Ред 9: (F, T, T, T) → P=F

• C2 (2, 6)
Ред 2: (T,T,T,F) → P=T
Ред 6: (T,F,T,F) → P=F

• C3 (1, 3)
Ред 1: (T, T, T, T) → P=T
Ред 3: (T, T, F, T) → P=F

• C4 (5, 6)
Ред 5: (T, F, T, T) → P=T
Ред 6: (T, F, T, F) → P=F