

## Micro-loan Explanation

The micro-loan sub-system is a P2P loan system that customers can offer loans to other customers. Once there is money on the micro-loan marketplace, other customers can borrow the loan from the marketplace. The borrowers need to pay an interest per loan (5%), so the lenders can receive their lent amount with interest.

For the customers who are willing to lend money, first-in-first-lend basis is applied. It means the customer who provides the money for lending first can be borrowed by other customers first.

The following scenario explains the mechanism of the micro-loan sub-system.

- Initially, John offers 3000, then Susan offers 800, and then Christina offers 1200 on the loan marketplace by putting the money to their lending account.

AvailableLoan				
	availableLoanID	Lender	amount	stillAvailable
		1 John	3000	T
		2 Susan	800	T
		3 Christina	1200	T

- Tony knows that there are 5000 on the marketplace. He decides to borrows 2500. By first-in-first-lend basis, John can lend the amount to Tony. When Tony succeeds to borrow it, he owes John 2625 ( $= 2500 * 1.05$ ).

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
		1 John	500	T		
		2 Susan	800	T		
		3 Christina	1200	T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
		1 John	Tony	2625	2625	F

- Tony repays 1700. Therefore, John can potentially lend this 1700 to other customers again. However, by first-in-first-lend basis, this money will queue to the end on the marketplace.

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
		1 John	500	T		
		2 Susan	800	T		
		3 Christina	1200	T		
		4 John	1700	T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
		1 John	Tony	2625	925	F

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4. Katy borrows 1100. Since the first availableLoan on the marketplace does not have enough money, the second availableLoan will also be considered in order to complete the loan process. Therefore, when Katy succeeds to borrow it, she owes John and Susan 525 and 630 respectively.

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
		1 John		0 F		
		2 Susan		200 T		
		3 Christina		1200 T		
		4 John		1700 T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
		1 John	Tony	2625	925 F	
		2 John	Katy	525	525 F	
		3 Susan	Katy	630	630 F	

5. Katy repays 900. By the loan order, she actually repays 525 to John and 375 to Susan.

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
		1 John		0 F		
		2 Susan		200 T		
		3 Christina		1200 T		
		4 John		1700 T		
		5 John		525 T		
		6 Susan		375 T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
		1 John	Tony	2625	925 F	
		2 John	Katy	525	0 T	
		3 Susan	Katy	630	255 F	

6. Tony repays 925.

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
		1 John		0 F		
		2 Susan		200 T		
		3 Christina		1200 T		
		4 John		1700 T		
		5 John		525 T		
		6 Susan		375 T		
		7 John		925 T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
		1 John	Tony	2625	0 T	
		2 John	Katy	525	0 T	
		3 Susan	Katy	630	255 F	

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7. Katy repays 255. Note that all the loans are repaid now. On the marketplace, John and Susan have 3150 ( $1700 + 525 + 925$ ) and 830 ( $200 + 375 + 255$ ) respectively thanks to the interest received.

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
	1	John	0	F		
	2	Susan	200	T		
	3	Christina	1200	T		
	4	John	1700	T		
	5	John	525	T		
	6	Susan	375	T		
	7	John	925	T		
	8	Susan	255	T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
	1	John	Tony	2625	0	T
	2	John	Katy	525	0	T
	3	Susan	Katy	630	0	T

8. John transfers 2000 from the lending account to his main account. The marketplace deducts 2000 from John's availableLoan from the end to the front of the queue.

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
	1	John	0	F		
	2	Susan	200	T		
	3	Christina	1200	T		
	4	John	1150	T		
	5	John	0	F		
	6	Susan	375	T		
	7	John	0	F		
	8	Susan	255	T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
	1	John	Tony	2625	0	T
	2	John	Katy	525	0	T
	3	Susan	Katy	630	0	T

9. John offers another 5000 on the marketplace.

AvailableLoan						
	availableLoanID	Lender	amount	stillAvailable		
	1	John	0	F		
	2	Susan	200	T		
	3	Christina	1200	T		
	4	John	1150	T		
	5	John	0	F		
	6	Susan	375	T		
	7	John	0	F		
	8	Susan	255	T		
	9	John	5000	T		
Loan						
	LoanID	Lender	Borrower	loanAmount	remainingAmount	allRepaid
	1	John	Tony	2625	0	T
	2	John	Katy	525	0	T
	3	Susan	Katy	630	0	T