

*** OUTPUT ****

With simplified code

PLEASE NOTE THAT CURRENCY EXCHANGE
RATES ARE VARIOUS POINTS IN TIME... SO
IT'S A FULLY WORKING
DEMONSTRATION.....

```
public class Combination
{
    public static void main(String[] args) {
        System.out.println("Welcome to Online IDE!! Happy Coding :)");

        int originalNumber=3;
        int n=originalNumber;
        int r =3;
        Map <Integer, Long> m = new HashMap<>();
        System.out.println("***COMBINATIONS*** (WITHOUT REPLACEMENT)");
        System.out.println("C(n,r) = n! / (r!(n-r)!)");
        System.out.println("C(" + n + ", " + r + ") = " + n + "!" + " / " + " (" + r + "!" + " (" + n - r + ")! )");

        exchangeCombinations ec = new exchangeCombinations(Combinations (n,r,originalNumber, m), n,r);
    }
}
```

n=3 and r=3 (the code in blue is output from one full cycle in the set).

Note: Combination.java uses unchecked or unsafe operations.

Note: Recompile with -Xlint:unchecked for details.

Welcome to Online IDE!! Happy Coding :)

COMBINATIONS (WITHOUT REPLACEMENT)

$C(n,r) = n! / (r!(n-r)!)$

$C(5,3) = 5! / (3!(5-3)!)$

Combinations: 10

Sample size (r): 3

Objects: (n): 5

RANDOM TWO CURRENCY CHECKER**

Current amount: £50.00

This is your new currency: £=>F => F56.00

This is conversion back to original to check arbitrage: F=>£ =>£49.84

RANDOM TWO CURRENCY CHECKER**

Current amount: F49.84

This is your new currency: F=>¥ => ¥8701.57

This is conversion back to original to check arbitrage: ¥=>F =>F49.60

*****This is current set size: 0*****
*****This is new set size: 1*****
This is saved in the set: £=>F=>¥

*****Arbitrage full check - full combination of currencies: £=>F=>¥

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): £50.00

This is your new currency: £=>F => F56.00

This is your new currency: F=>¥ => ¥9777.04

*****FULL REVERSE CONVERSION*****

Reverse conversion***: ¥>=F>=£

This is your new currency in reverse: ¥=>F => F55.73

This is your new currency in reverse: F=>£ => £49.60

*** FINAL CHECK - ARBITRAGE *****

- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.60

This is your new currency: ¥=>¥ => ¥49.60

This is conversion back to original to check arbitrage: ¥=>¥ =>¥49.60

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.60

This is your new currency: ¥=>£ => £0.25

This is conversion back to original to check arbitrage: £=>¥ =>¥49.40

RANDOM TWO CURRENCY CHECKER**

Current amount: £49.40

This is your new currency: £=>\$ => \$64.22

This is conversion back to original to check arbitrage: \$=>£ =>£53.30

*****This is current set size: 1*****

*****This is new set size: 2*****

This is saved in the set: ¥=>£=>\$

*****Arbitrage full check - full combination of currencies: ¥=>£=>\$

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): ¥50.00

This is your new currency: ¥=>£ => £0.26

This is your new currency: £=>\$ => \$0.33

*****FULL REVERSE CONVERSION*****

Reverse conversion***: \$>=£>=¥

This is your new currency in reverse: \$=>£ => £0.28

This is your new currency in reverse: £=>¥ => ¥53.74

**** FINAL CHECK - ARBITRAGE ****
- - - Arbitrage: - - - ¥3.74 (¥53.74 - ¥50.00)

RANDOM TWO CURRENCY CHECKER**
Current amount: \$53.74
This is your new currency: \$=>F => F46.75
This is conversion back to original to check arbitrage: F=>\$ =>\$54.23

RANDOM TWO CURRENCY CHECKER**
Current amount: F54.23
This is your new currency: F=>¥ => ¥9468.05
This is conversion back to original to check arbitrage: ¥=>F =>F53.97

RANDOM TWO CURRENCY CHECKER**
Current amount: ¥53.97
This is your new currency: ¥=>£ => £0.28
This is conversion back to original to check arbitrage: £=>¥ =>¥53.75

*****This is current set size: 2*****
*****This is new set size: 3*****
This is saved in the set: F=>¥=>£

*****Arbitrage full check - full combination of currencies: F=>¥=>£

*****FULL FORWARD CONVERSION*****
Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): F50.00
This is your new currency: F=>¥ => ¥8729.50
This is your new currency: ¥=>£ => £44.52

*****FULL REVERSE CONVERSION*****
Reverse conversion***: £=>¥=>F
This is your new currency in reverse: £=>¥ => ¥8694.84
This is your new currency in reverse: ¥=>F => F49.56

**** FINAL CHECK - ARBITRAGE ****
- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**
Current amount: £49.56
This is your new currency: £=>\$ => \$64.43
This is conversion back to original to check arbitrage: \$=>£ =>£53.48

RANDOM TWO CURRENCY CHECKER**
Current amount: \$53.48
This is your new currency: \$=>€ => €49.20
This is conversion back to original to check arbitrage: €=>\$ =>\$53.63

RANDOM TWO CURRENCY CHECKER**
Current amount: €53.63
This is your new currency: €=>F => F49.87

This is conversion back to original to check arbitrage: F=>€ =>€53.36

*****This is current set size: 3*****

*****This is new set size: 4*****

This is saved in the set: \$=>€=>F

*****Arbitrage full check - full combination of currencies: \$=>€=>F

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): \$50.00

This is your new currency: \$=>€ => €46.00

This is your new currency: €=>F => F42.78

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: F>=€>=\$

This is your new currency in reverse: F=>€ => €45.77

This is your new currency in reverse: €=>\$ => \$49.89

**** FINAL CHECK - ARBITRAGE *****

- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**

Current amount: F49.89

This is your new currency: F=>F => F49.89

This is conversion back to original to check arbitrage: F=>F =>F49.89

RANDOM TWO CURRENCY CHECKER**

Current amount: F49.89

This is your new currency: F=>¥ => ¥8711.05

This is conversion back to original to check arbitrage: ¥=>F =>F49.65

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.65

This is your new currency: ¥=>\$ => \$0.33

This is conversion back to original to check arbitrage: \$=>¥ =>¥49.89

*****This is current set size: 4*****

*****This is new set size: 5*****

This is saved in the set: F=>¥=>\$

*****Arbitrage full check - full combination of currencies: F=>¥=>\$

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): F50.00

This is your new currency: F=>¥ => ¥8729.50

This is your new currency: ¥=>\$ => \$58.49

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: \$>=¥>=F

This is your new currency in reverse: \$=>¥ => ¥8771.39

This is your new currency in reverse: ¥=>F => F50.00

*** FINAL CHECK - ARBITRAGE ***

- - NO Arbitrage: - -

RANDOM TWO CURRENCY CHECKER**

Current amount: \$50.00

This is your new currency: \$=>F => F43.50

This is conversion back to original to check arbitrage: F=>\$ =>\$50.46

RANDOM TWO CURRENCY CHECKER**

Current amount: F50.46

This is your new currency: F=>\$ => \$58.53

This is conversion back to original to check arbitrage: \$=>F =>F50.92

RANDOM TWO CURRENCY CHECKER**

Current amount: \$50.92

This is your new currency: \$=>€ => €46.85

This is conversion back to original to check arbitrage: €=>\$ =>\$51.06

*****This is current set size: 5*****

*****This is new set size: 6*****

This is saved in the set: F=>\$=>€

*****Arbitrage full check - full combination of currencies: F=>\$=>€

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): **F50.00**

This is your new currency: F=>\$ => \$58.00

This is your new currency: \$=>€ => €53.36

*****FULL REVERSE CONVERSION*****

Reverse conversion***: €=>\$=>F

This is your new currency in reverse: €=>\$ => \$58.16

This is your new currency in reverse: \$=>F => **F50.60**

*** FINAL CHECK - ARBITRAGE ***

- - **Arbitrage: - - F0.60 (F50.60 - F50.00) //SMALL ARBITRAGE OBSERVED**

RANDOM TWO CURRENCY CHECKER**

Current amount: €50.60

This is your new currency: €=>£ => £42.00

This is conversion back to original to check arbitrage: £=>€ =>€50.40

RANDOM TWO CURRENCY CHECKER**

Current amount: £50.40

This is your new currency: £=>¥ => ¥9842.90

This is conversion back to original to check arbitrage: ¥=>£ =>£50.20

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥50.20

This is your new currency: ¥=>F => F0.29

This is conversion back to original to check arbitrage: F=>¥ =>¥49.96

*****This is current set size: 6*****

*****This is new set size: 7*****

This is saved in the set: £=>¥=>F

*****Arbitrage full check - full combination of currencies: £=>¥=>F //IT CAN BE SEEN 3 CURRENCIES ARE USED

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): £50.00

This is your new currency: £=>¥ => ¥9765.00

This is your new currency: ¥=>F => F55.66

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: F=>¥=>£ //IT CAN BE SEEN THIS IS EXACT REVERSE

This is your new currency in reverse: F=>¥ => ¥9717.77

This is your new currency in reverse: ¥=>£ => £49.56

**** FINAL CHECK - ARBITRAGE *****

//VERDICT

- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**

Current amount: F49.56

This is your new currency: F=>£ => £44.11

This is conversion back to original to check arbitrage: £=>F =>F49.40

RANDOM TWO CURRENCY CHECKER**

Current amount: £49.40

This is your new currency: £=>¥ => ¥9648.21

This is conversion back to original to check arbitrage: ¥=>£ =>£49.21

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.21

This is your new currency: ¥=>€ => €0.30

This is conversion back to original to check arbitrage: €=>¥ =>¥48.82

*****This is current set size: 7*****

*****This is new set size: 8*****

This is saved in the set: £=>¥=>€

*****Arbitrage full check - full combination of currencies: £=>¥=>€

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): £50.00

This is your new currency: £=>¥ => ¥9765.00

This is your new currency: ¥=>€ => €59.57

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: €=>¥=>£
This is your new currency in reverse: €=>¥ => ¥9688.49
This is your new currency in reverse: ¥=>£ => £49.41

**** FINAL CHECK - ARBITRAGE *****

- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**

Current amount: €49.41
This is your new currency: €=>F => F45.95
This is conversion back to original to check arbitrage: F=>€ =>€49.17

RANDOM TWO CURRENCY CHECKER**

Current amount: F49.17
This is your new currency: F=>£ => £43.76
This is conversion back to original to check arbitrage: £=>F =>F49.01

RANDOM TWO CURRENCY CHECKER**

Current amount: £49.01
This is your new currency: £=>¥ => ¥9572.01
This is conversion back to original to check arbitrage: ¥=>£ =>£48.82

*****This is current set size: 8*****

*****This is new set size: 9*****

This is saved in the set: F=>£=>¥

*****Arbitrage full check - full combination of currencies: F=>£=>¥

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): F50.00
This is your new currency: F=>£ => £44.50
This is your new currency: £=>¥ => ¥8690.85

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: ¥=>£=>F
This is your new currency in reverse: ¥=>£ => £44.32
This is your new currency in reverse: £=>F => F49.64

**** FINAL CHECK - ARBITRAGE *****

- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.64
This is your new currency: ¥=>¥ => ¥49.64
This is conversion back to original to check arbitrage: ¥=>¥ =>¥49.64

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.64

```

This is your new currency: ¥=>£ => £0.25
This is conversion back to original to check arbitrage: £=>¥ =>¥49.45
*****

***RANDOM TWO CURRENCY CHECKER*****
Current amount: £49.45
This is your new currency: £=>F => F55.38
This is conversion back to original to check arbitrage: F=>£ =>£49.29
*****

*****This is current set size: 9*****
*****This is new set size: 10*****
This is saved in the set: ¥=>£=>F

*****Arbitrage full check - full combination of currencies: ¥=>£=>F

*****FULL FORWARD CONVERSION*****
Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): ¥50.00
This is your new currency: ¥=>£ => £0.26
This is your new currency: £=>F => F0.29
*****

*****FULL REVERSE CONVERSION*****
Reverse conversion*****: F>=£>=¥
This is your new currency in reverse: F=>£ => £0.25
This is your new currency in reverse: £=>¥ => ¥49.64
*****

**** FINAL CHECK - ARBITRAGE ****
- - - NO Arbitrage: - - -
*****

Number cycles: 10
Original list: [$, £, €, ¥, F]

** Process exited - Return Code: 0 **

```

n=5 and r=4 (the code in blue is output from one full cycle in the set).

Note: Combination.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
Welcome to Online IDE!! Happy Coding :)
COMBINATIONS (WITHOUT REPLACEMENT)
 $C(n,r) = n! / (r!(n-r)!)$
 $C(5,4) = 5! / (4!(5-4)!)$
Combinations: 5
Sample size (r): 4
Objects: (n): 5

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥50.00

This is your new currency: ¥=>\$ => \$0.34

This is conversion back to original to check arbitrage: \$=>¥ =>¥50.24

RANDOM TWO CURRENCY CHECKER**

Current amount: \$50.24

This is your new currency: \$=>F => F43.71

This is conversion back to original to check arbitrage: F=>\$ =>\$50.70

RANDOM TWO CURRENCY CHECKER**

Current amount: F50.70

This is your new currency: F=>£ => £45.12

This is conversion back to original to check arbitrage: £=>F =>F50.54

*****This is current set size: 0*****

*****This is new set size: 1*****

This is saved in the set: ¥=>\$=>F=>£

//IT CAN BE SEEN 4 CURRENCIES ARE USED

*****Arbitrage full check - full combination of currencies: ¥=>\$=>F=>£

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): ¥50.00

This is your new currency: ¥=>\$ => \$0.34

This is your new currency: \$=>F => F0.29

This is your new currency: F=>£ => £0.26

*****FULL REVERSE CONVERSION*****

Reverse conversion***: £>=F>=\$>=¥

This is your new currency in reverse: £=>F => F0.29

This is your new currency in reverse: F=>\$ => \$0.34

This is your new currency in reverse: \$=>¥ => ¥50.54

**** FINAL CHECK - ARBITRAGE ****

- - - Arbitrage: - - - ¥0.54 (¥50.54 - ¥50.00)

RANDOM TWO CURRENCY CHECKER**

Current amount: £50.54

This is your new currency: £=>F => F56.60

This is conversion back to original to check arbitrage: F=>£ =>£50.38

RANDOM TWO CURRENCY CHECKER**

Current amount: F50.38

This is your new currency: F=>£ => £44.84

This is conversion back to original to check arbitrage: £=>F =>F50.22

RANDOM TWO CURRENCY CHECKER**

Current amount: £50.22

This is your new currency: £=>¥ => ¥9807.37

This is conversion back to original to check arbitrage: ¥=>£ =>£50.02

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥50.02

This is your new currency: ¥=>€ => €0.31

This is conversion back to original to check arbitrage: €=>¥ =>¥49.63

*****This is current set size: 1*****

*****This is new set size: 2*****

This is saved in the set: F=>£=>¥=>€

*****Arbitrage full check - full combination of currencies: F=>£=>¥=>€

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): F50.00

This is your new currency: F=>£ => £44.50

This is your new currency: £=>¥ => ¥8690.85

This is your new currency: ¥=>€ => €53.01

*****FULL REVERSE CONVERSION*****

Reverse conversion****: €>=¥>=£>=F

This is your new currency in reverse: €=>¥ => ¥8622.76

This is your new currency in reverse: ¥=>£ => £43.98

This is your new currency in reverse: £=>F => F49.25

**** FINAL CHECK - ARBITRAGE *****

- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**

Current amount: €49.25

This is your new currency: €=>€ => €49.25

This is conversion back to original to check arbitrage: €=>€ =>€49.25

RANDOM TWO CURRENCY CHECKER**

Current amount: €49.25

This is your new currency: €=>F => F45.81

This is conversion back to original to check arbitrage: F=>€ =>€49.01

RANDOM TWO CURRENCY CHECKER**

Current amount: F49.01

This is your new currency: F=>£ => £43.62

This is conversion back to original to check arbitrage: £=>F =>F48.86

RANDOM TWO CURRENCY CHECKER**

Current amount: £48.86

This is your new currency: £=>¥ => ¥9541.38

This is conversion back to original to check arbitrage: ¥=>£ =>£48.66

*****This is current set size: 2*****

*****This is new set size: 3*****

This is saved in the set: €=>F=>£=>¥

*****Arbitrage full check - full combination of currencies: €=>F=>£=>¥

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): €50.00

This is your new currency: €=>F => F46.50

This is your new currency: F=>£ => £41.38

This is your new currency: £=>¥ => ¥8082.49

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: ¥>=£>=F>=€

This is your new currency in reverse: ¥=>£ => £41.22

This is your new currency in reverse: £=>F => F46.17

This is your new currency in reverse: F=>€ => €49.40

*** FINAL CHECK - ARBITRAGE *****

- - - NO Arbitrage: - - -

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.40

This is your new currency: ¥=>¥ => ¥49.40

This is conversion back to original to check arbitrage: ¥=>¥ =>¥49.40

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥49.40

This is your new currency: ¥=>\$ => \$0.33

This is conversion back to original to check arbitrage: \$=>¥ =>¥49.64

RANDOM TWO CURRENCY CHECKER**

Current amount: \$49.64

This is your new currency: \$=>£ => £41.20

This is conversion back to original to check arbitrage: £=>\$ =>\$53.56

RANDOM TWO CURRENCY CHECKER**

Current amount: £53.56

This is your new currency: £=>F => F59.98

This is conversion back to original to check arbitrage: F=>£ =>£53.39

*****This is current set size: 3*****

*****This is new set size: 4*****

This is saved in the set: ¥=>\$=>£=>F

*****Arbitrage full check - full combination of currencies: ¥=>\$=>£=>F

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): ¥50.00

This is your new currency: ¥=>\$ => \$0.34

This is your new currency: \$=>£ => £0.28

This is your new currency: £=>F => F0.31

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: F>=£>=\$>=¥

This is your new currency in reverse: F=>£ => £0.28

This is your new currency in reverse: £=>\$ => \$0.36

This is your new currency in reverse: \$=>¥ => ¥54.04

**** FINAL CHECK - ARBITRAGE ***** // IT CAN BE SEEN ARBITRAGE

- - - Arbitrage: - - - ¥4.04 (¥54.04 - ¥50.00)

RANDOM TWO CURRENCY CHECKER**

Current amount: F54.04

This is your new currency: F=>€ => €57.82

This is conversion back to original to check arbitrage: €=>F =>F53.77

RANDOM TWO CURRENCY CHECKER**

Current amount: €53.77

This is your new currency: €=>£ => £44.63

This is conversion back to original to check arbitrage: £=>€ =>€53.56

RANDOM TWO CURRENCY CHECKER**

Current amount: £53.56

This is your new currency: £=>¥ => ¥10459.41

This is conversion back to original to check arbitrage: ¥=>£ =>£53.34

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥53.34

This is your new currency: ¥=>F => F0.30

This is conversion back to original to check arbitrage: F=>¥ =>¥53.08

*****This is current set size: 4*****

*****This is new set size: 5*****

This is saved in the set: €=>£=>¥=>F

*****Arbitrage full check - full combination of currencies: €=>£=>¥=>F

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): €50.00

This is your new currency: €=>£ => £41.50

This is your new currency: £=>¥ => ¥8104.95

This is your new currency: ¥=>F => F46.20

*****FULL REVERSE CONVERSION*****

Reverse conversion****: F=>¥=>£=>€

This is your new currency in reverse: F=>¥ => ¥8065.75

This is your new currency in reverse: ¥=>£ => £41.14

This is your new currency in reverse: £=>€ => €49.36

**** FINAL CHECK - ARBITRAGE *****

- - - NO Arbitrage: - - -

Number cycles: 5

Original list: [\$, £, €, ¥, F]

** Process exited - Return Code: 0 **

n=5 and r=5

This output is too long (120 combinations, so it will just show few of them).

Note: Combination.java uses unchecked or unsafe operations.

Note: Recompile with -Xlint:unchecked for details.

Welcome to Online IDE!! Happy Coding :)

COMBINATIONS (WITHOUT REPLACEMENT)

$C(n,r) = n! / (r!(n-r)!)$

$C(5,5) = 5! / (5!(5-5)!)$

Combinations: 120

Sample size (r): 5

Objects: (n): 5

RANDOM TWO CURRENCY CHECKER**

Current amount: \$50.00

This is your new currency: \$=>£ => £41.50

This is conversion back to original to check arbitrage: £=>\$ =>\$53.95

RANDOM TWO CURRENCY CHECKER**

Current amount: £53.95

This is your new currency: £=>€ => €64.74

This is conversion back to original to check arbitrage: €=>£ =>£53.73

RANDOM TWO CURRENCY CHECKER**

Current amount: €53.73

This is your new currency: €=>F => F49.97

This is conversion back to original to check arbitrage: F=>€ =>€53.47

RANDOM TWO CURRENCY CHECKER**

Current amount: F53.47

This is your new currency: F=>¥ => ¥9335.48

This is conversion back to original to check arbitrage: ¥=>F =>F53.21

*****This is current set size: 0*****

*****This is new set size: 1*****

This is saved in the set: \$=>£=>€=>F=>¥

*****Arbitrage full check - full combination of currencies: \$=>£=>€=>F=>¥

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): \$50.00

This is your new currency: \$=>£ => £41.50

This is your new currency: £=>€ => €49.80

This is your new currency: €=>F => F46.31

This is your new currency: F=>¥ => ¥8085.96

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: ¥>=F>=€>=£>=\$

This is your new currency in reverse: ¥=>F => F46.09

This is your new currency in reverse: F=>€ => €49.32

This is your new currency in reverse: €=>£ => £40.93

This is your new currency in reverse: £=>\$ => \$53.21

*** FINAL CHECK - ARBITRAGE *****

- - - Arbitrage: - - - \$3.21 (\$53.21 - \$50.00)

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥53.21

This is your new currency: ¥=>\$ => \$0.36

This is conversion back to original to check arbitrage: \$=>¥ =>¥53.47

RANDOM TWO CURRENCY CHECKER**

Current amount: \$53.47

This is your new currency: \$=>£ => £44.38

This is conversion back to original to check arbitrage: £=>\$ =>\$57.69

RANDOM TWO CURRENCY CHECKER**

Current amount: £57.69

This is your new currency: £=>¥ => ¥11267.16

This is conversion back to original to check arbitrage: ¥=>£ =>£57.46

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥57.46

This is your new currency: ¥=>€ => €0.35

This is conversion back to original to check arbitrage: €=>¥ =>¥57.01

RANDOM TWO CURRENCY CHECKER**

Current amount: €57.01

This is your new currency: €=>F => F53.02

This is conversion back to original to check arbitrage: F=>€ =>€56.73

*****This is current set size: 1*****

*****This is new set size: 2*****

This is saved in the set: \$=>£=>¥=>€=>F

*****Arbitrage full check - full combination of currencies: \$=>£=>¥=>€=>F

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): \$50.00

This is your new currency: \$=>£ => £41.50

This is your new currency: £=>¥ => ¥8104.95

This is your new currency: ¥=>€ => €49.44

This is your new currency: €=>F => F45.98

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: F>=€>=¥>=£>=\$

This is your new currency in reverse: F=>€ => €49.20
This is your new currency in reverse: €=>¥ => ¥8002.04
This is your new currency in reverse: ¥=>£ => £40.81
This is your new currency in reverse: £=>\$ => \$53.05

*** FINAL CHECK - ARBITRAGE ***

- - - Arbitrage: - - - \$3.05 (\$53.05 - \$50.00)

RANDOM TWO CURRENCY CHECKER**

Current amount: F53.05

This is your new currency: F=>¥ => ¥9262.62

This is conversion back to original to check arbitrage: ¥=>F =>F52.80

RANDOM TWO CURRENCY CHECKER**

Current amount: ¥52.80

This is your new currency: ¥=>F => F0.30

This is conversion back to original to check arbitrage: F=>¥ =>¥52.54

RANDOM TWO CURRENCY CHECKER**

Current amount: F52.54

This is your new currency: F=>€ => €56.22

This is conversion back to original to check arbitrage: €=>F =>F52.28

RANDOM TWO CURRENCY CHECKER**

Current amount: €52.28

This is your new currency: €=>\$ => \$56.99

This is conversion back to original to check arbitrage: \$=>€ =>€52.43

RANDOM TWO CURRENCY CHECKER**

Current amount: \$52.43

This is your new currency: \$=>£ => £43.52

This is conversion back to original to check arbitrage: £=>\$ =>\$56.57

*****This is current set size: 2*****

*****This is new set size: 3*****

This is saved in the set: ¥=>F=>€=>\$=>£

*****Arbitrage full check - full combination of currencies: ¥=>F=>€=>\$=>£

*****FULL FORWARD CONVERSION*****

Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): ¥50.00

This is your new currency: ¥=>F => F0.29

This is your new currency: F=>€ => €0.30

This is your new currency: €=>\$ => \$0.33

This is your new currency: \$=>£ => £0.28

*****FULL REVERSE CONVERSION*****

Reverse conversion*****: £>=\$>€>=F>=¥

This is your new currency in reverse: £=>\$ => \$0.36

This is your new currency in reverse: \$=>€ => €0.33

This is your new currency in reverse: €=>F => F0.31

This is your new currency in reverse: F=>¥ => ¥53.58

**** FINAL CHECK - ARBITRAGE ****
- - - Arbitrage: - - - ¥3.58 (¥53.58 - ¥50.00)

//THIS IS FINAL EXECUTION...

RANDOM TWO CURRENCY CHECKER**
Current amount: F166.65
This is your new currency: F=>£ => £148.32
This is conversion back to original to check arbitrage: £=>F =>F166.12

RANDOM TWO CURRENCY CHECKER**
Current amount: £166.12
This is your new currency: £=>F => F186.05
This is conversion back to original to check arbitrage: F=>£ =>£165.59

RANDOM TWO CURRENCY CHECKER**
Current amount: F165.59
This is your new currency: F=>€ => €177.18
This is conversion back to original to check arbitrage: €=>F =>F164.77

RANDOM TWO CURRENCY CHECKER**
Current amount: €164.77
This is your new currency: €=>¥ => ¥26800.51
This is conversion back to original to check arbitrage: ¥=>€ =>€163.48

RANDOM TWO CURRENCY CHECKER**
Current amount: ¥163.48
This is your new currency: ¥=>\$ => \$1.10
This is conversion back to original to check arbitrage: \$=>¥ =>¥164.27

*****This is current set size: 119*****

*****This is new set size: 120*****

This is saved in the set: £=>F=>€=>¥=>\$

*****Arbitrage full check - full combination of currencies: £=>F=>€=>¥=>\$

*****FULL FORWARD CONVERSION*****
Current amount (AMOUNT SHOULD RETURN HERE IF NO ARBITRAGE): £50.00
This is your new currency: £=>F => F56.00
This is your new currency: F=>€ => €59.92
This is your new currency: €=>¥ => ¥9745.99
This is your new currency: ¥=>\$ => \$65.30

*****FULL REVERSE CONVERSION*****
Reverse conversion*****: \$>=¥>=€>=F>=£
This is your new currency in reverse: \$=>¥ => ¥9792.76
This is your new currency in reverse: ¥=>€ => €59.74
This is your new currency in reverse: €=>F => F55.55
This is your new currency in reverse: F=>£ => £49.44

*** FINAL CHECK - ARBITRAGE ***

-- NO Arbitrage: --

Number cycles: 674

//it can be seen taken 674 cycles for 120 combinations

Original list: [\$, £, €, ¥, F]

** Process exited - Return Code: 0 **

n=1 and r=5

```
Note: Combination.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
Welcome to Online IDE!! Happy Coding :)
***COMBINATIONS*** (WITHOUT REPLACEMENT)
C(n,r) = n! / (r!(n-r)!)
C(1,5) = 1! / (5!(1-5)!)
Combinations: 1

Sample size (r): 5
Objects: (n): 1
Sample size (r) or Objects (n) is too small
```

n=5 and r=1

```
Note: Combination.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
Welcome to Online IDE!! Happy Coding :)
***COMBINATIONS*** (WITHOUT REPLACEMENT)
C(n,r) = n! / (r!(n-r)!)
C(5,1) = 5! / (1!(5-1)!)
Combinations: 5

Sample size (r): 1
Objects: (n): 5
Sample size (r) or Objects (n) is too small

** Process exited - Return Code: 0 **
```

n=6 and r=3 (since there are 5 currencies, it will fail as expected)..

```
Note: Combination.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
Welcome to Online IDE!! Happy Coding :)
***COMBINATIONS*** (WITHOUT REPLACEMENT)
C(n,r) = n! / (r!(n-r)!)
C(6,3) = 6! / (3!(6-3)!)
Combinations: 20

Sample size (r): 3
Objects: (n): 6
Sample size or objects selected is larger than total currencies available
```

n=3 and r=6 (since there are 5 currencies, it will fail as expected)..

```
Note: Combination.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
Welcome to Online IDE!! Happy Coding :)
***COMBINATIONS*** (WITHOUT REPLACEMENT)
C(n,r) = n! / (r!(n-r)!)
C(3,6) = 3! / (6!(3-6)!)
Combinations: 6

Sample size (r): 6
Objects: (n): 3
Sample size too big
```

*** CODE ****

SEE TEXT DOCUMENTS