

MA201_ASSIGNMENT 1

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DATE: 02/09/2022

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Task: choosing k ball from n,

1. permutation with replacement
2. permutation without replacement
3. combination with replacement
4. combination without replacement

Code above experiment.

Solution Code:

```
import java.util.*;
public class permcomb {
    public static int fact(int x){
        int i,fact=1;
        for(i=1;i<=x;i++){
            fact=fact*i;
        }
        return fact;
    }
    public static int power(int n,int k){

        int r = 1;
        while (k!= 0) {
            r = r *n;
            k--;
        }
        return r;
    }
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the number of objects:");
        int n=sc.nextInt();
        System.out.println("Enter number of Objects to be chosen:");
        int k=sc.nextInt();
        System.out.println("permutation with replacement:");
        System.out.println(power(n,k));
        System.out.println("permutation without replacement:");
        System.out.println(fact(n)/fact(n-k));
    }
}
```

```

        System.out.println("combination without replacement:");
        System.out.println(fact(n)/(fact(k)*fact(n-k)));
        System.out.println("combination with replacement:");
        System.out.println(fact(k+n-1)/(fact(k)*fact(n-1)));
        sc.close();
    }
}

```

OUTPUT:

```

PS C:\Users\Asus> cd "d:\Java\java homework\" ; if ($?) { javac permcomb.java } ; if ($?) { java permcomb }
Enter the number of objects:
5
Enter number of Objects to be chosen:
3
permutation with replacement:
125
permutation without replacement:
60
combination without replacement:
10
combination with replacement:
35

```

```

PS C:\Users\Asus> cd "d:\Java\java homework\" ; if ($?) { javac permcomb.java } ; if ($?) { java permcomb }
Enter the number of objects:
9
Enter number of Objects to be chosen:
5
permutation with replacement:
59049
permutation without replacement:
15120
combination without replacement:
126
combination with replacement:
399

```