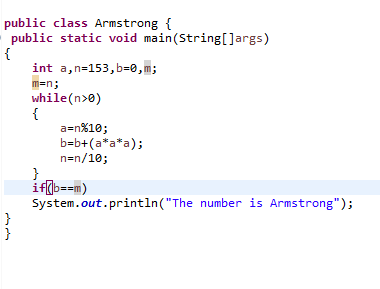
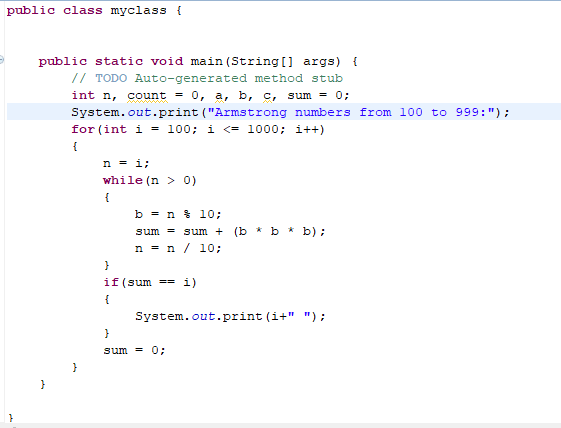
**Assignment 1**

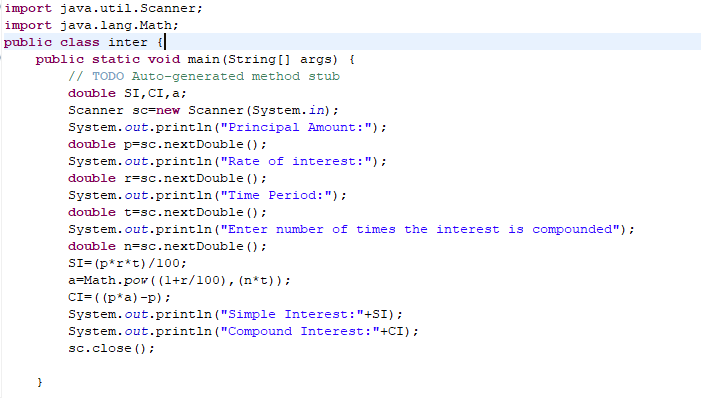
**Question 1:**



**Question 2:**



**Question 3:**



**Question 4:**

**import** java.util.Scanner;

**public** **class** result {

**public** **static** **void** main(String[] args) {

Scanner test=**new** Scanner(System.*in*);

System.*out*.println("Enter the marks:");

System.*out*.println("Maths:");

**int** a=test.nextInt();

System.*out*.println("Science:");

**int** b=test.nextInt();

System.*out*.println("English:");

**int** c=test.nextInt();

**if**((a>60)&&(b>60)&&(c>60)){

System.*out*.println("Result Declared:Passed");

}

**if**(((a>60)&&(b>60)&&(c<60))||((a>60)&&(b<=60)&&(c>60))||((a<=60)&&(b>60)&&(c>60))){

System.*out*.println("Result Declared:Promoted");

}

**if**(((a>60)&&(b<=60)&&(c<=60))||((a<=60)&&(b>60)&&(c<=60))||((a<=60)&&(b<=60)&&(c>60))){

System.*out*.println("Result Declared:Failed");

}

test.close();

}

}

**Question 5:**

**import** java.util.Scanner;

**public** **class** tax {

**public** **static** **void** main(String[] args) {

Scanner s=**new** Scanner(System.*in*);

System.*out*.println("Enter the CTC:");

**long** a=s.nextLong();

**if**((a>=0)&&(a<=180000)){

System.*out*.println("Tax amount:Nil");

}

**if**((a>=181001)&&(a<=300000)){

System.*out*.println("Tax amount:"+(a\*0.1));

}

**if**((a>=300001)&&(a<=500000)){

System.*out*.println("Tax amount:"+(a\*0.2));

}

**if**((a>=500001)&&(a<=1000000)){

System.*out*.println("Tax amount:"+(a\*0.3));

}

}

}

**Question 6:**

**import** java.util.Scanner;

**public** **class** user{

**public** **static** **void** main(String[] args) {

**int** i=1,flag=0,g=3;

Scanner sc=**new** Scanner(System.*in*);

System.*out*.println("Enter the username:");

String a=sc.next();

System.*out*.println("Enter the password:");

String b=sc.next();

**for**(i=0;i<3;i++)

{

System.*out*.println("Enter valid username:");

String c=sc.next();

System.*out*.println("Enter valid password:");

String d=sc.next();

**if**(a.equals(c) && b.equals(d))

{

System.*out*.println("welcome");

**break**;

}

**else**{

flag=flag+1;

}

**if**(flag==3)

{

System.*out*.println("Contact Admin");

}

}

}

}

**Question 7:**

**import** java.util.Scanner;

**public** **class** Array {

**public** **static** **void** main(String[] args) {

Scanner scan=**new** Scanner(System.*in*);

**int** flag=0;

**int** array[]={5,12,14,6,78,19,1,23,26,35,37,7,52,86,47};

System.*out*.println("Enter element you want to find:");

**int** a=scan.nextInt();

**for**(**int** i=0;i<15;i++){

**if**(array[i]==a){

System.*out*.println("Element "+a+" found at "+i+" position");

flag=1;

**break**;

}

}

**if**(flag==0){

System.*out*.println("Element"+a+"not found");

}

}

}

**Question 8:**

**public** **class** bubbleSort {

**public** **static** **void** main(String[] args) {

**int** n ,b,length=15;

**int** array[]={5,12,14,6,78,19,1,23,26,35,37,7,52,86,47};

System.*out*.println("Array before bubble sort:");

**int** i;

**for**( i=0;i<length;i++){

System.*out*.println(array[i]+" ");

}

**for**(i=0;i<length;i++){

**for**(**int** j=1;j<(length-i);j++){

**if**(array[j-1]>array[j]){

b=array[j-1];

array[j-1]=array[j];

array[j]=b;

}

}

}

System.*out*.println("Array after bubble sort:");

**for**(i=0;i<length;i++){

System.*out*.println(array[i]+" ");

}

}

}

**Question 9:**

**import** java.util.\*;

**public** **class** StudentMarks {

**public** **static** **void** main(String[] args) {

Scanner s=**new** Scanner(System.*in*);

System.*out*.println("Enter the marks of student 'A':");

System.*out*.println("Maths:");

**int** a=s.nextInt();

System.*out*.println("Science:");

**int** b=s.nextInt();

System.*out*.println("English:");

**int** c=s.nextInt();

System.*out*.println("Enter the marks of student'B':");

System.*out*.println("Maths:");

**int** d=s.nextInt();

System.*out*.println("Science:");

**int** e=s.nextInt();

System.*out*.println("English:");

**int** f=s.nextInt();

System.*out*.println("Enter the marks of student'C':");

System.*out*.println("Maths:");

**int** g=s.nextInt();

System.*out*.println("Science:");

**int** h=s.nextInt();

System.*out*.println("English:");

**int** i=s.nextInt();

System.*out*.println("Total marks of student 'A':"+(a+b+c));

System.*out*.println("Average marks of student 'A':"+((a+b+c)/3));

System.*out*.println("Total marks of student 'B':"+(d+e+f));

System.*out*.println("Average marks of student 'B':"+((d+e+f)/3));

System.*out*.println("Total marks of student 'C':"+(g+h+i));

System.*out*.println("Average marks of student 'C':"+((g+h+i)/3));

System.*out*.println("Total marks of subject 'Maths':"+(a+d+g));

System.*out*.println("Average marks of subject 'Maths':"+((a+d+g)/3));

System.*out*.println("Total marks of subject 'Science':"+(b+e+h));

System.*out*.println("Average marks of subject 'Science':"+((b+e+h)/3));

System.*out*.println("Total marks of subject 'English':"+(c+f+i));

System.*out*.println("Average marks of subject 'English':"+((c+f+i)/3));

}

}

**Assignment 2**

**Question 1:**

**public** **final** **class** singleton {}

**public** **class** single **extends** singleton {

**void** run(){

System.*out*.println("Running...");

}

**public** **static** **void** main(String[] args) {

single s=**new** single();

s.run();

}

}

**Question 2:**

**import** java.util.\*;

**public** **class** Employee {

**int** empid;

String name;

**long** salary;

Scanner get = **new** Scanner(System.***in***);

**void** getdata()

{

System.***out***.println("Enter Name of the Employee");

name = get.nextLine();

System.***out***.println("Enter employee id ");

empid = get.nextInt();

}

**void** display()

{

System.***out***.println("Name of the employee is:- "+name);

System.***out***.println("Employee id:- "+empid);

}

}

**class** Manager **extends** Employee{

**long** salary,incentive,bp,gross;

**void** getmanager()

{

System.***out***.println("Enter basic pay");

bp = get.nextInt();

System.***out***.println("Enter incentives");

incentive=get.nextInt();

}

**void** calculate(){

gross=bp+incentive;

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.***out***.println("SALARY SLIP");

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.***out***.println("Basic Pay:Rs"+bp);

System.***out***.println("Incentive Pay:Rs"+incentive);

System.***out***.println("Gross Pay:Rs"+gross);

}

}

**class** Labour **extends** Employee{

**double** salary,bp,gross,overTime,OTP;

**void** getlabour()

{

System.***out***.println("Enter basic pay");

bp = get.nextInt();

System.***out***.println("Enter OverTime hrs:");

overTime=get.nextInt();

}

**void** calculate(){

OTP=(overTime\*500);

gross=bp+OTP;

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.***out***.println("SALARY SLIP");

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.***out***.println("Basic Pay:Rs"+bp);

System.***out***.println("OverTime Pay:Rs"+OTP);

System.***out***.println("Gross Pay:Rs"+gross);

}

}

**class** salary{

**public** **static** **void** main(String[]args){

**int** choice,cont;

**do**

{

System.***out***.println("PAYROLL");

System.***out***.println(" 1.Manager \t 2.Labour ");

Scanner c = **new** Scanner(System.***in***);

choice=c.nextInt();

**switch**(choice)

{

**case** 1:

{

Manager p=**new** Manager();

p.getdata();

p.getmanager();

p.display();

p.calculate();

**break**;

}

**case** 2:

{

Labour asst=**new** Labour();

asst.getdata();

asst.getlabour();

asst.display();

asst.calculate();

**break**;

}

}

System.***out***.println("Do u want to continue 0 to quit and 1 to continue ");

cont=c.nextInt();

}**while**(cont==1);

}

}

**Question 5:**

**public** **abstract** **class** Shape {

**private** String name;

**public** Shape(String name){

**this**.name=name;

}

**public** String getName() {

**return** name;

}

**public** **void** setName(String name) {

**this**.name = name;

}

**public** **abstract** **void** draw();

}

**class** Line **extends** Shape{

**public** Line(String name) {

**super**(name);

}

**public** **void** draw(){

System.***out***.println("Drawing Line\_\_\_\_\_");

}

}

**class** Rectangle **extends** Shape{

**public** Rectangle(String name) {

**super**(name);

}

**public** **void** draw(){

System.***out***.println("Drawing Rectangle\_\_\_\_\_");

}

}

**class** Cube **extends** Shape{

**public** Cube(String name) {

**super**(name);

}

**public** **void** draw(){

System.***out***.println("Drawing Cube\_\_\_\_\_\_\_");

}

}

**class** main{

**public** **static** **void** main(String[]args){

Cube cu=**new** Cube(**null**);

Rectangle re=**new** Rectangle(**null**);

Line li=**new** Line(**null**);

cu.draw();

re.draw();

li.draw();

}

}

**Assignment 3**

**Question 1:**

**public** **class** HelloWorld {

**public** **static** **void** main(String[] args) {

String str="Hello World";

**int** len=str.length();

System.*out*.println("Length of str is:"+len);

}

}

**Question 2:**

**public** **class** Hello2 {

**public** **static** **void** main(String[] args) {

String str1="Hello,";

String str2="How are you?";

String str3=str1.concat(str2);

System.*out*.println("String is:"+str3);

}

}

**Question 3:**

**a) import** java.util.Scanner;

**public** **class** NO1 {

**public** **static** **void** main(String[]args){

String str="Java String pool refers to collection of Strings which are stored in heap memory";

System.*out*.println("Lowercase:"+str.toLowerCase());

}

}

**b) import** java.util.Scanner;

**public** **class** NO1 {

**public** **static** **void** main(String[]args){

String str="Java String pool refers to collection of Strings which are stored in heap memory";

System.*out*.println("Uppercase:"+str.toUpperCase());

}

}

**c) import** java.lang.\*;

**public** **class** test1 {

**public** **static** **void** main(String[] args) {

String str="Java String pool refers to collection of Strings which are stored in heap memory";

String st2=str.replaceAll("a", "\\$");

System.*out*.println("After replacement:"+st2);

}

}

**d)** import java.util.Scanner;

public class hello {

public static void main(String[] args) {

String str = "Java String pool refers to collection of Strings which are stored in heap memory";

if(str.contains("collection"))

{

System.out.print("Yes, the word is present");

}

else

{

System.out.print("No, the word is not present");

}

}

}

**e)** import java.util.Scanner;

public class hello {

public static void main(String[] args) {

String str1= "Java String pool refers to collection of Strings which are stored in heap memory";

String str2 = "java string pool refers to collection of strings which are stored in heap memory";

if(str1 == str2)

{

System.out.print("Yes, Both the string are same");

}

else{

System.out.print("No, Both the string are not same");

}

}

}

f)

**Question 4:Use of StringBuffer**

1. **import** java.lang.\*;

**public** **class** t4 {

/\*\*

\* **@param** args

\*/

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

StringBuffer sbf=**new** StringBuffer("StringBuffer");

sbf.append(" is a peer class of String");

sbf.append(" that provides much of");

sbf.append(" the functionality of strings");

System.*out*.println(sbf);

}

}

**2) import** java.lang.\*;

**public** **class** t5 {

**public** **static** **void** main(String[] args) {

StringBuffer z=**new** StringBuffer("It is used to at the specified index position");

**char** []cArray={'i','n','s','e','r','t',' ','t','e','x','t',' '};

z.insert(14,cArray);

System.*out*.println(z);

}

}

**3) import** java.lang.\*;

**public** **class** t6 {

**public** **static** **void** main(String[] args) {

StringBuffer y=**new** StringBuffer("This method returns the reversed object on which it was called");

y.reverse();

System.*out*.println(y);

}

}

**Question 5:Use of StringBuilder**

**1) import** java.lang.\*;

**public** **class** t4 {

/\*\*

\* **@param** args

\*/

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

StringBuilder sbf=**new** StringBuilder("StringBuilder");

sbf.append(" is a peer class of String");

sbf.append(" that provides much of");

sbf.append(" the functionality of strings");

System.*out*.println(sbf);

}

}

**2) import** java.lang.\*;

**public** **class** t5 {

**public** **static** **void** main(String[] args) {

StringBuilder z=**new** StringBuilder("It is used to at the specified index position");

**char** []cArray={'i','n','s','e','r','t',' ','t','e','x','t',' '};

z.insert(14,cArray);

System.*out*.println(z);

}

}

**3) import** java.lang.\*;

**public** **class** t6 {

**public** **static** **void** main(String[] args) {

StringBuilder y=**new** StringBuilder("This method returns the reversed object on which it was called");

y.reverse();

System.*out*.println(y);

}

}

**Assignment 4:Exception Handling**

**Question 1: import** java.util.Scanner;

**public** **class** Ass1 {

**public** **static** **void** main(String[] args) {

**try**{

Scanner s=**new** Scanner(System.*in*);

**int** a=s.nextInt();

**int** b=s.nextInt();

**int** c=a/b;

System.*out*.println(c);

}

**catch**(ArithmeticException ex){

System.*out*.println("Division by zero");

//ex.printStackTrace();

}

}

}

**Question 2:**

**import** java.util.Scanner;

**public** **class** UnsupportedOperationException {

**public** **static** **void** main(String[] args) {

Scanner s=**new** Scanner(System.*in*);

**int** a=s.nextInt();

**int** b=s.nextInt();

**int** c=a/b;

System.*out*.println(c);

//ex.printStackTrace();

}

}

**Question 3: a)**

**import** java.util.Scanner;

**class** InsufficientBalanceException **extends** Exception{

**public** InsufficientBalanceException(String s){

**super**(s);

}

}

**public** **class** SavingAccount {

**public** **static** **void** main(String[]args){

Scanner sc=**new** Scanner(System.***in***);

System.***out***.println("Enter id:");

**long** id=sc.nextInt();

System.***out***.println("Enter Balance:");

**double** balance=sc.nextInt();

System.***out***.println("Enter deposit amount:");

**double** deposit=sc.nextInt();

balance=balance+deposit;

System.***out***.println("Enter withdraw amount:");

**double** amount=sc.nextInt();

**try**{

//balance=balance-amount;

**if**(amount>=balance){

**throw** **new** InsufficientBalanceException("Transaction");}

**else**{

System.***out***.println("Your Transaction is completed");

}

}

**catch**(Exception ex){

System.***out***.println("Invalid");

}

}}

**b)**

**import** java.util.Scanner;

**class** IllegalBankTransactionException **extends** Exception{

**public** IllegalBankTransactionException(String s){

**super**(s);

}

}

**public** **class** SavingAccount {

**public** **static** **void** main(String[]args){

Scanner sc=**new** Scanner(System.***in***);

System.***out***.println("Enter id:");

**long** id=sc.nextInt();

System.***out***.println("Enter Balance:");

**double** balance=sc.nextInt();

System.***out***.println("Enter deposit amount:");

**double** deposit=sc.nextInt();

balance=balance+deposit;

System.***out***.println("Enter withdraw amount:");

**double** amount=sc.nextInt();

**try**{**if**(amount<=0){

**throw** **new** Exception("Transaction");}

**else**{

System.***out***.println("Your Transaction is completed");

}

}

**catch**(Exception ex){

System.***out***.println("Illegal");

}

}

}

**Assignment 5**

**Question 1:**

import java.util.HashSet;

import java.util.\*;

class Employee{

String id;

String name;

String salary;

String department;

public Employee(String id,String name,String salary,String department){

this.id=id;

this.name=name;

this.salary=salary;

this.department=department;

}

}

public class Que1 {

public static void main(String[] args) {

HashSet<Employee> emp=new HashSet<Employee>();

emp.add(new Employee("12","Navin","30000","An"));

emp.add(new Employee("2","Reem","50000","HR"));

//Employee e1=new Employee("Navin","30000","Admin");

//Employee e2=new Employee("2","Reem","50000","HR");

//emp.add(e1);

//emp.add(e2);

for(Employee s:emp){

System.out.println("Department="+s.department+"\t"+"Name="+s.name+"\t"+"Salary="+s.salary+"\t"+"ID="+s.id);

}

}

}

**Question 2:**

**import** java.util.\*;

**import** java.util.Set;

**import** java.util.HashMap;

**public** **class** Hash2 {

**public** **static** **void** main(String[] args) {

HashMap<Integer,Double>map=**new** HashMap<Integer,Double>();

map.put(1,1.1);

map.put(2,2.2);

map.put(3,3.3);

map.put(4,4.4);

map.put(5,5.5);

map.put(6,6.6);

map.put(7,7.7);

map.put(8,8.8);

map.put(9,9.9);

map.put(10,10.1);

Set<Integer>keys=map.keySet();

**for**(Integer key:keys){

System.*out*.println(key+"="+map.get(key));

}

}

}

**Question 3:**

**import** java.util.ArrayList;

**import** java.util.Collections;

**public** **class** change {

**public** **static** **void** main(String[] args) {

ArrayList<Integer>values=**new** ArrayList<Integer>();

values.add(55);

values.add(76);

values.add(40);

values.add(79);

values.add(35);

System.*out*.println("Before Swap");

**for**(**int** a:values){

System.*out*.println(a);

}

Collections.*swap* (values,1,2);

System.*out*.println("After Swap");

**for**(**int** b:values){

System.*out*.println(b);

}

}

}

**Question 4:**

**a) import** java.util.HashMap;

**import** java.util.Iterator;

**public** **class** Pair {

**public** **static** **void** main(String[] args) {

HashMap<String,String>map=**new** HashMap<String,String>();

map.put("1", "Hello");

map.put("2", "Hiii");

map.put("3", "Nice");

map.put("4", "Bye");

System.***out***.println(map);

}

}

**b) import** java.util.HashMap;

**import** java.util.Iterator;

**public** **class** Pair {

**public** **static** **void** main(String[] args) {

HashMap<String,java.util.Date>map=**new** HashMap<String,java.util.Date>();

map.put("Today is",**new** java.util.Date());

System.***out***.println(map);

}

}

**Assignment 6:Collection**

**Question 2:**

**import** java.util.TreeSet;

**public** **class** Que2 {

**public** **static** **void** main(String[] args) {

TreeSet<String>abc=**new** TreeSet<String>();

abc.add("Science");

abc.add("Maths");

abc.add("English");

abc.add("Science");

abc.add("Hindi");

abc.add("Social Science");

abc.add("Maths");

abc.add("Environment");

abc.add("PT");

abc.add("Music");

**for**(String a:abc){

System.*out*.println(a);

}

}

}

**Question 3:**

**Assignment 7**

**Question 2:**

**import** java.lang.annotation.Annotation;

**import** java.lang.annotation.ElementType;

**import** java.lang.annotation.Retention;

**import** java.lang.annotation.RetentionPolicy;

**import** java.lang.annotation.Target;

**import** java.util.\*;

@Retention(RetentionPolicy.*RUNTIME*)

@Target(ElementType.*TYPE*)

**@interface** info{

String name() **default** "Reem";

String developer\_supervisior();

}

@info(name= "Sameer", developer\_supervisior = "Neha")

**class** Developer{

**int** id;

String date;

String time;

**double** version;

**public** Developer(**int** id, String date, String time, **double** version) {

**this**.id = id;

**this**.date = date;

**this**.time = time;

**this**.version = version;

}

}

**public** **class** Test {

**public** **static** **void** main(String[] args) {

Developer obj = **new** Developer(1, "05-06-2019", "10:30", 1.8);

Class c = obj.getClass(); // to create a class obj

Annotation an = c.getAnnotation(info.**class**); //obj of annotation

info s = (info)an;

System.*out*.println(s.developer\_supervisior()+" "+ s.name());

}

}

**Assignment 8:Lambda Expression**

**Question 1:**

import java.util.function.\*;

import java.util.\*;

interface Operation{

int arth(int x,int y);

}

public class arithmeticOp {

public static void main(String[] args) {

Operation add1=(int a,int b)->(a+b);

Operation subtract1=(int a,int b)->(a-b);

Operation multiply1=(int a,int b)->(a\*b);

Operation division1=(int a,int b)->(a/b);

System.out.println(add1.arth(5,5));

System.out.println(subtract1.arth(5,5));

System.out.println(multiply1.arth(5,5));

System.out.println(division1.arth(5,5));

}

}

**Question 2:**

**import** java.util.Scanner;

**import** java.util.function.\*;

**public** **class** Order {

**public** **static** **void** main(String[] args) {

Scanner s=**new** Scanner(System.*in*);

System.*out*.println("Enter the Order Price:");

**int** a=s.nextInt();

**if**(a>10000)System.*out*.println("Order Status:Completed");

**else** System.*out*.println("Order Status:Incompleted");

}

**}**

**Question 3:**

**a)Supplier**

import java.util.function.Supplier;

public class FunctionalIf {

public static void main(String[] args) {

int n=3;

display(()->n+10);

display(()->n+100);

}

static void display(Supplier<Integer>arg) {

System.out.println(arg.get());

}

}

**b)Consumer**

**import** java.util.function.Consumer;

**class** Employee {

**private** **double** no = 0;

**public** **void** setNo(**double** no) {

**this**.no = no;

}

**public** **void** printNo() {

System.***out***.println(no);

}

}

**public** **class** FunctionalIf {

**public** **static** **void** main(String[] args) {

Consumer<Employee> updateAge = p -> p.setNo(991);

Employee p = **new** Employee();

updateAge.accept(p);

p.printNo();

}

}

**c)Predicate:**

**Question 4:**

import java.util.ArrayList;

import java.util.Arrays;

import java.util.List;

import java.util.Collection;

public class Length {

public static void main(String[] args) {

List<String>p=new ArrayList<String>();

p.add("Green");

p.add("Grass");

p.add("cat");

p.add("moon");

p.add("Walk");

p.removeIf(a->(a.length()%2!=0));

for(String i:p)

{System.out.println(i);}

}

}