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Binding Line

Anhui University of Science and Technology

2021～2022 Academic Year: First Term International Postgraduate Exam Paper Course Title: Computer Programming Language Exam Mode: Close-book Paper Type: A

	I	II	III	IV	V	VI	VII	VIII	IX	X	Total Score
Standard Score	10	15	20	25	30	-	-	-	-	-	100
Score											

I. (10 Points) Write a program to print out all even numbers in [0, 100].

```
Public class Even Numbers
{
Public static void main(string args[])
{int number = 100;
System.out.printhn("Numbers" + number + ":");
for (int i=1; i<=number; i++)
{ if(i%2==0)
{
System.out.printh(i+" ");
}
}
}
```

II. (15 points) Write a method to calculate n!

Method signature: double factorial(double n)

```
class Factorial {
{Static double factorial(double n)
if(n==0)
return 1;
else
return (n*factorial(n-1));
}Public static void main(string args[]){
double i, fact=1, number=n;
factorial=factorial(number);
System.out.println("Factorial of"+number+"is:"+fact);
}
}
```

III. (20 points) Write a method to check whether a given number is prime.

Method signature: boolean isPrime(int n)

```
int count=0, number=2;
System.out.println("Prime number"+NOP);
while (count<NOP){
  boolean isPrime(int n);
  for(int d=2; d<=n/2, d++){
    if(number % d==0){
      isPrime=false;
      break;
    }
```

```
if(isPrime){
System.out.print(number+"");
  count ++;
if(count % NOP==0){
}
}number ++;
}
input.close();
}
}
```

IV. (25 points) Given two unsorted arrays of integer, write a method to collect all unique numbers. For example, given {2, 1, 6, 3} and {3, 6, 5, 2}, the output should be {1, 2, 3, 5, 6}.

Method signature: int[] getUniqueElements(int[] arr1, int[] arr2)

```
Public class Unique{
  Public static int[] getUniqueElements(int[] arr1, int[] arr2);
    int[] combine = stream.concat(Arrays.stream(arr1), Arrays.stream(arr2))
              .toArray(String[]::new);
    List<int> distinctElements = Array.stream(combine)
              .distinct()
              .collect(collectors.toList());
    return distinctElements.toArray(new Int[distinctElements.size()]);
  }Public static void main(int[] args){
    Int[] arr1 = new Int[] {2,1,6,3};
    Int[] arr2 = new Int[] {3,6,5,2};
  System.out.println([illegible] Int.; on(",", Merge unique(arr1, arr2));
  }
  }
```

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V. (30 points) Given a java class Rectangle for representing a rectangle on a two-dimensional plane with X and Y coordinates. The class has the following data field:

```
double x;      // x coordinate of its top-left point
double y;      // y coordinate of its top-left point
double width;  // the width of the rectangle
double height; // the height of the rectangle
```

You task is to implement the following methods:

double getLength() // returns the length of the rectangle;

double getArea() // returns the area of the rectangle;

boolean isContained(Rectangle r) // returns a boolean value to indicate whether rectangle r is contained in the current rectangle;

boolean intersectWith(Rectangle r) // returns a boolean value to indicate whether Rectangle r intersects with the current rectangle.

```
Public class rectangle {
  Public static void main (string args[])
      double x=0, y=0, width =5, height =10;
    double getLength = Math.sqrt (width * width +height *
                                                height);
    double getArea =width * height;
    boolean isContained = (x + width) > x && (y +height)
                                        > y;
    boolean intersectWith = (x +width) < (x + width) &&
                          (y +height) < (y + height);

    System.out.println ("length" + getLength);
    System.out.println ("Area" + getArea),
    System.out.println ("Contained" + isContained);
    System.out.println ("Intersect" + intersectWidth);
    }
```

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Reference

content	syntax
Basic data types	int, float, double, boolean, String

if-statement	if(condition1){
	statements1;
	}else if(condition2){
	statements2;
	}else{
	statements3;
	}

for-statement	for (initial-action; loop-continuation-condition; action-after-each-iteration) {
	Statement(s);
	}

Method	return-type method-name(arguments){
	statements
	}

output	System.out.println(content)