ARTIFICIAL INTELLIGENCE LAB

ASSIGNMENT – 8

WATER JUG PROBLEM

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Q)we have 2 water jugs one measures 'x' gallons and the other one measures 'y' gallons but there is no measuring level mentioned on either of these jugs i.e. we cannot know the exact amount of water filled in the jug. If we want to know how ?fill 3 gallons of water in any one of this jugs?

CODE :

```
import java.util.*;
public class Jug {
public static void main(String args[]){
Scanner input=new Scanner(System.in);
System.out.print("Enter the jar1 value : "); int
jar1=input.nextInt();
System.out.print("Enter the jar2 value : ");
int jar2=input.nextInt();
System.out.print("Enter the result value expected : ");  int
result=input.nextInt();
Result(jar1,jar2,result);
}   public static void Result(int jar1, int jar2, int
result){     int x=0,y=0;
System.out.println("Jar1"+" "+"Jar2");
System.out.println(x+" "+y);
```

```
while(x!=result){ int temp=0;
if(y!=jar2){ y=jar2;
if(x==result) {     break;
}
System.out.println("Jar1"+" "+"Jar2");
System.out.println(x+" "+y);
}
if(x+y<jar1){ x=x+y; y=x-y;
if(x==result)  {     break;
}
System.out.println("Jar1"+" "+"Jar2");
System.out.println(x+" "+y);
} else{     y=y-(jar1-x); x=x+(jar1-x);
System.out.println("Jar1"+" "+"Jar2");
System.out.println(x+" "+y);
if(x==result) {      break;
   }
}
   if(x==jar1){
x=0;
System.out.println(
"Jar1"+" "+"Jar2");
System.out.println(
x+" "+y); temp=y;
y=x; x=temp;
```

```
System.out.println(
"Jar1"+" "+"Jar2");
System.out.println(
x+" "+y);
if(x==result){
break;   }
   }
}
}
 }
```

```java
import java.util.*;
public class Jug {
public static void main(String args[]){
    Scanner input=new Scanner(System.in);
    System.out.print("Enter the jar1 value : ");
    int jar1=input.nextInt();
System.out.print("Enter the jar2 value : ");
int jar2=input.nextInt();
System.out.print("Enter the result value expected : ");
int result=input.nextInt();
Result(jar1,jar2,result);
}
public static void Result(int jar1, int jar2, int result){
    int x=0,y=0;
System.out.println("Jar1"+" "+"Jar2");
System.out.println(x+" "+y);
while(x!=result){
    int temp=0;
    if(y!=jar2){ y=jar2;
    if(x==result) {
        break;
}
System.out.println("Jar1"+" "+"Jar2");
System.out.println(x+" "+y);
}
if(x+y<jar1){ x=x+y; y=x-y;
if(x==result)  {
    break;
}
System.out.println("Jar1"+" "+"Jar2");
System.out.println(x+" "+y);
}
else{
```

```
34      y=y-(jar1-x);
35      x=x+(jar1-x);
36  System.out.println("Jar1"+" "+"Jar2");
37  System.out.println(x+" "+y);
38  if(x==result) {
39      break;
40      }
41      }
42      if(x==jar1){
43          x=0;
44          System.out.println("Jar1"+" "+"Jar2");
45          System.out.println(x+" "+y);
46          temp=y; y=x; x=temp;
47          System.out.println("Jar1"+" "+"Jar2");
48          System.out.println(x+" "+y);
49          if(x==result){
50              break;
51
52          }
53      }
54    }
55  }
56   }
57
```

OUTPUT :

```
Enter the jar1 value : 6
Enter the jar2 value : 5
Enter the result value expected : 3
Jar1 Jar2
0 0
Jar1 Jar2
0 5
Jar1 Jar2
5 0Jar1 Jar2
5 5
Jar1 Jar2
6 4
Jar1 Jar2
0 4
Jar1 Jar2
4 0
Jar1 Jar2
4 5
Jar1 Jar2
6 3
Jar1 Jar2
0 3
Jar1 Jar2
3 0
```