Assignment

Post Graduate Diploma in Advanced Computing

CONCEPT OF PROGRAMMING

PGDAC March 2023 (A)

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Q1) Write a program to calculate the sum of first 10 natural number.

Ans.

Source Code:

```
public class Naman {
public static void main (String [] args)
{
int i, n= 10, sum=0;
for (i = 1; i <= n; ++i)
{
sum = sum + i;
}
System.out.println("Sum of First 10 Natural Numbers is = " + sum);
}
}
```

Output:

```
Sum of First 10 Natural Numbers is = 55
```

Q2) Write a program that prompts the user to input a positive integer. It should then print the multiplication table of that number.

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main (String[] args)
{
int i, n, t;
Scanner s=new Scanner (System.in);
System.out.println("Enter a positive number");
n=s. nextInt ();
if(n>0)
{
for (i = 1; i <= 10; ++i)
{
t = n * i;
System.out.println(n+"x"+i+"="+t);
}
}
else
System.out.println("You have not entered a
positive number");
}
}
```

Output:

```
Enter a positive number
15
15x1=15
15x2=30
15x3=45
15x4=60
15x5=75
15x6=90
15x7=105
15x8=120
15x9=135
15x10=150
```

Q3) Write a program that prompts the user to input an integer and then outputs the number with the digits reversed. For example, if the input is 12345, the output should be 54321.

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main (String[] args)
{
int q, n, rev=0;
Scanner s=new Scanner (System.in);
System.out.println("Enter a number");
n=s. nextInt ();
while(n>0)
{
q=n%10;
rev=(rev*10) +q;
n=n/10;
}
```

```
System.out.println("Reverse of your number is"+"
"+rev);
}
}
```

Output:

```
Enter a number
369852147
Reverse of your number is 741258963
```

Q4) Write a do-while loop that asks the user to enter two numbers. The numbers should be added and the sum displayed. The loop should ask the user whether he or she wishes to perform the operation again. If so, the loop should repeat; otherwise, it should terminate. (While loop).

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main (String [] args)
{
Scanner s = new Scanner (System.in);
int num1, num2;
char choice;
do
{
System.out.print("Enter the first number ");
num1 = s. nextInt ();
System.out.print("Enter the second number ");
num2 = s. nextInt ();
int sum = num1 + num2;
System.out.println("Sum of numbers: " + sum);
System.out.print("Do you want to continue y/n? ");
choice = s. next (). charAt (0);
```

```
System.out.println();
} while (choice=='y' || choice == 'Y');
}
}
```

Output:

```
Enter the first number 12
Enter the second number 13
Sum of numbers: 25
Do you want to continue y/n? y

Enter the first number 26
Enter the second number 45
Sum of numbers: 71
Do you want to continue y/n? n
```

Q5) Write a program to print out all Armstrong numbers between 1 and 500. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number.
For example, 153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3).

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main (String [] args)
{
int n, count = 0, a, q, c, sum = 0;
System.out.print("Armstrong numbers from 1 to 500:");
for (int i = 1; i <= 500; i++)
{
n = i;
sum = 0;
while (n > 0)
```

```
{
q = n % 10;
sum = sum + (q * q * q);
n = n / 10;
}
if (sum == i)
{
System.out.println(i+" ");
}
}
}
}
```

Output:

```
Armstrong numbers from 1 to 500:1
153
370
371
407
```

Q6) Write a program to print Fibonacci series of n terms where n is input by user:
0 1 1 2 3 5 8 13 24 ..... n.

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main (String [] args)
{
Scanner s = new Scanner (System.in);
int n;
int i = 0, j= 1, k;
System.out.println("Enter number of terms of
series: ");
n = s. nextInt ();
System.out.print(i + " " + j + " ");
for (int l = 3; l <= n; l++){
k=i+j;
System.out.print(k + " ");
i=j;
j=k;}}}
```

Output:

```
Enter number of terms of series:
10
0 1 1 2 3 5 8 13 21 34
```

Q7) Write a program to print following:

****

****

****

****

Ans.

Source Code:

```
public class Naman {
public static void main (String [] args)   {
int i, j;
for (i=1; i<=4; i++) {
for (j=1; j<=10; j++) {System.out.print("*");
}
System.out.println();}
}
}
```

Output:

```
**********
**********
**********
**********
```

Q8) Write a program to print following:

*

**

***

****

*****

Ans.

Source Code:

```
public class Naman {
public static void main (String[] args)   {
int i, j;
for (i=1; i<=5; i++) {
for (j=1; j<=i; j++) {
System.out.print("*");}
System.out.println();}}}
```

Output:

```
*
**
***
****
*****
```

Q9) Write a program to print following:

*

**

***

****

*****

Ans.

Source Code:

```
public class Naman {
public static void main (String [] args) {
for (int i = 0; i <= 5; i++){
for (int j = 5; j > i; j--){
System.out.print(" ");}
for (int k = 0; k <= i; k++){
System.out.print("*");}
System.out.println();}}}
```

Output:

```
    *
   **
  ***
 ****
*****
******
```

Q9) Write a program to print following:

```
                *
               ***
              *****
             *******
    .....................................................
```

Ans.

Source Code:

```
public class Naman{
public static void main(String arg[]) {
for (int i=0; i<5; i++){
for (int j=5-i; j>1; j--){
System.out.print(" ");}
for (int j=0; j<=i; j++ ){
System.out.print("*");}
System.out.println();
}}}
```

Output:

```
    *
   **
  ***
 ****
*****
```

Q10) Write a program to print following:

```
    1
   22
  333
 4444
55555
```

Ans.

Source Code:

```
public class Naman {
public static void main(String[] args){
for(int i = 1;i <= 5;i++){
for(int j = 9-i;j > 1;j--){
System.out.print(" ");}
for(int k = 1;k <=i;k++){
System.out.print(i);}
System.out.println();}}}
```

Output:

```
    1
   22
  333
 4444
55555
```

Q11) Write a program to print following:

ABCDEEDCBA
ABCD DCBA
ABC CBA
AB BA
A A

Ans.

Source Code:

```
public class Naman {
public static void main(String[] args)
{
int alphabet = 65;int rows=5;
for(int i=0;i<= rows;i++)
{
for(int j=0;j<=rows-i;j++)
{
System.out.print((char)(alphabet+j));
}
for(int k=1;k<=i*2-1; k++){System.out.print(" ");
}
for(int l=rows-i; l>=0; l--)
{
```

```
if(l!=rows)
System.out.print((char)(alphabet+l));
}
System.out.println();
}
}
}
```

Output:

```
ABCDEFEDCBA
ABCDE EDCBA
ABCD   DCBA
ABC     CBA
AB       BA
A         A
```

Q12) Write a program in java to find the sum of the even and odd digits of the number which is given as input.

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main (String[] args)
{
Scanner s = new Scanner(System.in);
int n, sumod=0,sumev=0,r;
System.out.println("Enter your Number: ");
int num=s.nextInt();
n=num;
while(num>0){
r=num%10;
if(r%2==0)
sumev=sumev+r;
else
```

```
sumod=sumod+r;
num=num/10;
}
System.out.println("Sum of even digits in "+n+" is "+sumev);
System.out.println("Sum of odd digits in "+n+" is "+sumod);
}
}
```

Output:

```
Enter your Number:
123456789
Sum of even digits in 123456789 is 20
Sum of odd digits in 123456789 is 25
```

Q13) Write a program to check if given number is prime or not.

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main(String[] args)
{
Scanner s=new Scanner(System.in);
int i,m=0,t=0;
int n;
System.out.println("Enter Your Number");
n=s.nextInt();
m=n/2;
if(n==0||n==1){
System.out.println(n+" is not prime number"); }
else{
for(i=2;i<=m;i++){
if(n%i==0){
System.out.println(n+" is not prime number");
```

```
t=1;
break;}
}
if(t==0)  {
System.out.println(n+" is prime number"); }
}
}
}
```

Output:

```
Enter Your Number
3
3 is prime number
```

Q14) write a program to print prime numbers between 2 to 20.

Ans.

Source Code:

```
public class Naman {
public static void main(String[] args)   {
int num = 20, c;
for (int i = 2; i <= num; i++) {c = 0;
for (int j = 2; j <= i / 2; j++) {
if (i % j == 0) {c++; break;}}
if (c == 0)
System.out.println("Prime numbers are"+"
"+i);}}}
```

Output:

```
Prime numbers are 2
Prime numbers are 3
Prime numbers are 5
Prime numbers are 7
Prime numbers are 11
Prime numbers are 13
Prime numbers are 17
Prime numbers are 19
```

Q15) Write program to find largest among three numbers.

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main(String[] args)
{
int x, y, z;
Scanner s = new Scanner(System.in);
System.out.print("Enter the first number:");
x = s.nextInt();
System.out.print("Enter the second number:");
y = s.nextInt();
System.out.print("Enter the third number:");
z = s.nextInt();
if(x > y && x > z)
System.out.println("Largest number is:"+x);
else if(y > z)
System.out.println("Largest number is:"+y);
```

```
else
System.out.println("Largest number is:"+z);
}
}
```

Output:

```
Enter the first number:12
Enter the second number:13
Enter the third number:28
Largest number is:28
```

Q16) Write a program to find sum of all integers greater than 100 and less than 200 that are divisible by 7.

Ans.

Source Code:

```
public class Naman {
public static void main(String[] args)
{
int sum = 0;
for (int i = 101; i < 200; i++){
if (i % 7 == 0)
sum = sum + i;
}
System.out.println("The Sum of the number
between 100 to 200 which are divisible by 7 is:
"+sum);
}
}
```

Output:

```
The Sum of the number between 100 to 200 which
are divisible by 7 is: 2107
```

Q17) Write a Java program to print numbers between 1 to 100 which are divisible by 3, 5 and by both.

Ans.

Source Code:

```
public class Naman {
public static void main(String[] args)
{
System.out.println("Divided by 3: ");
for (int i=1; i<100; i++){
if (i%3==0)
System.out.print(i +", ");
}
System.out.println("Divided by 5: ");
for (int i=1; i<100; i++) {
if (i%5==0) System.out.print(i +", ");
}
System.out.println("Divided by both 3 & 5: ");
for (int i=1; i<100; i++) {
if (i%3==0 && i%5==0) System.out.print(i +", ");
```

```
}
System.out.println();
}
}
```

Output:

```
Divided by 3:
3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42,
45, 48, 51, 54, 57, 60, 63, 66, 69, 72, 75, 78, 81,
84, 87, 90, 93, 96, 99, Divided by 5:
5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70,
75, 80, 85, 90, 95, Divided by both 3 & 5:
15, 30, 45, 60, 75, 90,
```

Q18) create a menu driven application in java that show

"Add" Add two number
"Subtract" Subtract two number
"Multiple" Multiple two numbers
"Exit " Exit .

Ask two numbers from user and as per user choice perform necessary action using switch command

Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main(String[] args)  {
int a,b,c;
int choice;
Scanner s = new Scanner(System.in);
while(true) {
System.out.println("Enter 1 for Addition");
System.out.println("Enter 2 for Subtraction");
System.out.println("Enter 3 for Multiplication");
System.out.println("Enter 4 for Division");
```

```
System.out.println("Enter 5 to Quit");
System.out.println("Enter your choice");
choice = s.nextInt();
switch (choice) {
case 1:System.out.println("Enter the first number
");
a = s.nextInt();
System.out.println("Enter the second number");
b = s.nextInt();
c = a + b;
System.out.println("The sum of the numbers is = "
+ c);
break;
case 2:System.out.println("Enter the first number
");
a = s.nextInt();
System.out.println("Enter the second number");
b = s.nextInt();
c = a - b;
```

```
System.out.println("The difference of the numbers is = " + c);
break;
case 3:System.out.println("Enter the first number");
a = s.nextInt();
System.out.println("Enter the second number");
b = s.nextInt();
c = a * b;
System.out.println("The product of the numbers is = " + c);
break;
case 4:
System.out.println("Enter the first number");
a = s.nextInt();
System.out.println("Enter the second number");
b = s.nextInt();
c = a / b;
System.out.println("The quotient is = " + c );
break;
```

```
case 5:
System.exit(0);
default:System.out.println("Invalid choice!!!
Please make a valid choice.");
}}}}
```

Output:

```
Enter 1 for Addition
Enter 2 for Subtraction
Enter 3 for Multiplication
Enter 4 for Division
Enter 5 to Quit
Enter your choice
3
Enter the first number
14
Enter the second number
15
The product of the numbers is = 210
Enter 1 for Addition
Enter 2 for Subtraction
Enter 3 for Multiplication
Enter 4 for Division
Enter 5 to Quit
Enter your choice
```

Q19) Write a program to display first 1 to 20 even number on screen . Terminate the program when number 16 is found using break command.

Ans.

Source Code:

```
public class Naman {
public static void main(String[] args)
{
for (int i = 1; i <=20; i++) {
 if (i % 2 == 0)
  System.out.println("Even numbers between 2 and 20 are"+" "+i);
 if(i==16)
   break;} }}
```

Output:

```
Even numbers between 2 and 20 are 2
Even numbers between 2 and 20 are 4
Even numbers between 2 and 20 are 6
Even numbers between 2 and 20 are 8
Even numbers between 2 and 20 are 10
Even numbers between 2 and 20 are 12
Even numbers between 2 and 20 are 14
Even numbers between 2 and 20 are 16
```

Q20) Write a Java program that accepts two double variables and test if both strictly between 0 and 1 and false otherwise.
Hint n1 > 0 && n1 < 1 && n2 > 0 && n2 < 1
Ans.

Source Code:

```
import java.util.*;
public class Naman {
public static void main(String[] args)   {
Scanner s = new Scanner(System.in);
System.out.print("Input first number: ");
double n1 = s.nextDouble();
System.out.print("Input second number: ");
double n2 = s.nextDouble();
if(n1 > 0 && n1 < 1 && n2 > 0 && n2 < 1)
System.out.println("VALID");
else System.out.println("INVALID");     }}
```

Output:

```
Input first number: 0.5
Input second number: 0.5
VALID
```