Tender Heart High School

Class X **Subject- Computer Application** **Date-03.07.2024**

Answer Key- Library classes

Multiple Choice Questions

1classes 2.wrapper class 3.autoboxing 4.integer wrapper class

5. String to primitive type 6. Character.isWhiteSpace( )

7. parse and valueOf functions are same. 8. char

Fill in the blanks

1.Package 2. java.lang 3.class 4.Integer 5.upper
6.Float.parseFloat(String)

7.autoboxing 8.Character

State True or False

1.True 2.False 3.True 4.True 5.True

Find the output of the following program snippets

1 false

2 a

3 1007

4 70

70

5 Y 89

6 A Great Victory

7 c

8 A a

Case-Study based question

1

(a) Wrapper class

(b) parseInt() or valueOf()

(c) Autoboxing

(d) int num = Integer.valueOf("24");

Write the purpose of the following functions

1 It is used to convert string data into float data.

2 It is used to convert double data to a string.

3 It is used to convert string data into the Integer wrapper object.

4 It is used to check if the character given as its argument is a digit.

5 It is used to check if the character given as its argument is a whitespace.

Answer the following questions

1 In Java, a package is used to group related classes. Packages are of 2 types:

1. Built-In packages — These are provided by Java API
2. User-Defined packages — These are created by the programmers to efficiently structure their code.
   java.util, java.lang are examples of built-in packages.

2 The asterisk(*) sign indicates that all the classes of the imported package can be used in the program.

3 The wrapper class is a class that contains a primitive data type. Whenever an object to a wrapper class is created, a field in memory is allocated to contain a primitive data.

Wrapper classes are present in java.lang package. The different wrapper classes provided by Java are Boolean, Byte, Integer, Float, Character, Short, Long and Double.

4(a)

isUpperCase()

It is used to check if the character given as its argument is in upper case or not.

Its return type is boolean.

toUpperCase()

It is used to convert the character given as its argument to upper case.

Its return type is char.

4(b)

parseInt()

It converts a string to an integer.

Its return type is int.

toString()

It converts an integer to a string.

Its return type is String.

4(c) Primitive Data Types

Primitive data types are fundamental data types of Java.

Primitive data types are built-in data types defined by Java language specification.

Examples of primitive data types are byte, short, int, long, float, double, char, boolean**.**

Composite Data Types

Composite data types are created by using primitive data types.

Composite data types are defined by the programmer.

Examples of composite data types are Class and Array.

5(a) Value of res is 65.

5(b) java.lang package contains wrapper classes.

5(c) char check(int n) takes an integer as an argument and returns a character.

Solutions to Unsolved Java Programs on Character Manipulations

1

Write a program in Java to input a character. Find and display the next 10^{th} character in the ASCII table.

```
import java.util.Scanner;

public class TenthChar
{
   public static void main(String args[]) {

      Scanner in = new Scanner(System.in);
      System.out.print("Enter a character: ");
      char ch = in.next().charAt(0);
      char nextCh = (char)(ch + 10);
      System.out.println("Tenth character from "
         + ch + " is " + nextCh);
   }
}
```

2

Write a program in Java to input a character. Display next 5 characters.

```
import java.util.Scanner;

public class FiveChars
{
   public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
      System.out.print("Enter a character: ");
      char ch = in.next().charAt(0);

      System.out.println("Next 5 characters from "
         + ch + " are:");

      for (int i = 1; i <= 5; i++) {
         System.out.println(++ch);
      }
   }
}
```

3

Write a program in Java to generate all the alternate letters in the range of letters from A to Z.

```
public class AlternateLetters
{
   public static void main(String args[]) {
      for (char ch = 'A'; ch <= 'Z'; ch = (char)(ch + 2)) {
         System.out.println(ch);
      }
   }
}
```

4

Write a program to input a set of 20 letters. Convert each letter into upper case. Find and display the number of vowels and number of consonants present in the set of given letters.

```
import java.util.Scanner;

public class 20LetterSet
{
   public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
      System.out.println("Enter any 20 letters");
      int vc = 0, cc = 0;
      for (int i = 0; i < 20; i++) {
         char ch = in.next().charAt(0);
         ch = Character.toUpperCase(ch);
         if (ch == 'A' ||
            ch == 'E' ||
            ch == 'I' ||
            ch == 'O' ||
            ch == 'U')
               vc++;
         else if (ch >= 'A' && ch <= 'Z')
            cc++;
      }
      System.out.println("Number of Vowels = " + vc);
      System.out.println("Number of Consonants = " + cc);
   }
}
```

5

Write a program in Java to accept an integer number N such that 0<N<27. Display the corresponding letter of the alphabet (i.e. the letter at position N).
[**Hint:** If N =1 then display A]

```
import java.util.Scanner;

public class Integer2Letter
{
   public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
      System.out.print("Enter integer: ");
      int n = in.nextInt();

      if (n > 0 && n < 27) {
         char ch = (char)(n + 64);
         System.out.println("Corresponding letter = " + ch);
      }
      else {
         System.out.println("Please enter a number in 1 to 26 range");
      }
   }
}
```

6

Write a program to input two characters from the keyboard. Find the difference (d) between their ASCII codes. Display the following messages:
If d=0 : both the characters are same.
If d<0 : first character is smaller.
If d>0 : second character is smaller.
Sample Input :
D
P
Sample Output :
d= (68-80) = -12
First character is smaller

```
import java.util.Scanner;
```

```
public class ASCIIDiff
{
   public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
      System.out.print("Enter first character: ");
      char ch1 = in.next().charAt(0);
      System.out.print("Enter second character: ");
      char ch2 = in.next().charAt(0);

      int d = (int)ch1 - (int)ch2;
      if (d > 0)
         System.out.println("Second character is smaller");
      else if (d < 0)
         System.out.println("First character is smaller");
      else
         System.out.println("Both the characters are same");
   }
}
```

7

Write a program to input a set of any 10 integer numbers. Find the sum and product of the numbers. Join the sum and product to form a single number. Display the concatenated number.
[**Hint:** let sum=245 and product = 1346 then the number after joining sum and product will be 2451346]

```
import java.util.Scanner;

public class SumProdConcat
{
   public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
      System.out.println("Enter 10 integers");
      long sum = 0, prod = 1;
      for (int i = 0; i < 10; i++) {
         int n = in.nextInt();
         sum += n;
         prod *= n;
      }

      String s = Long.toString(sum) + Long.toString(prod);
```

```
        long r = Long.parseLong(s);

        System.out.println("Concatenated Number = " + r);
    }
}
```

8

Write a menu driven program to generate the upper case letters from Z to A and lower case letters from 'a' to 'z' as per the user's choice.
Enter '1' to display upper case letters from Z to A and Enter '2' to display lower case letters from a to z.

```
import java.util.Scanner;

public class Letters
{
    public static void main(String args[]) {

        Scanner in = new Scanner(System.in);
        System.out.println("Enter '1' to display upper case letters from Z to A");
        System.out.println("Enter '2' to display lower case letters from a to z");

        System.out.print("Enter your choice: ");
        int ch = in.nextInt();
        int count = 0;

        switch (ch) {

            case 1:
            for (int i = 90; i > 64; i--) {
                char c = (char)i;
                System.out.print(c);
                System.out.print(" ");
                count++;

                //Print 10 characters per line
                if (count == 10) {
                    System.out.println();
                    count = 0;
                }
            }
```

```
            break;

            case 2:
            for (int i = 97; i < 123; i++) {
                char c = (char)i;
                System.out.print(c);
                System.out.print(" ");
                count++;

                //Print 10 characters per line
                if (count == 10) {
                    System.out.println();
                    count = 0;
                }
            }
            break;

            default:
            System.out.println("Incorrect Choice");
        }
    }
}
```

9

Write a program to input a letter. Find its ASCII code. Reverse the ASCII code and display the equivalent character.
Sample Input: Y
Sample Output: ASCII Code = 89
Reverse the code = 98
Equivalent character: b

```
import java.util.Scanner;

public class ASCIIReverse
{
  public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
      System.out.print("Enter a letter: ");
      char l = in.next().charAt(0);

      int a = (int)l;
```

```
      System.out.println("ASCII Code = " + a);

      int r = 0;
      while (a > 0) {
         int digit = a % 10;
         r = r * 10 + digit;
         a /= 10;
      }

      System.out.println("Reversed Code = " + r);
      System.out.println("Equivalent character = " + (char)r);
   }
}
```

10

Write a menu driven program to display
(i) first five upper case letters
(ii) last five lower case letters as per the user's choice.
Enter '1' to display upper case letters and enter '2' to display lower case letters.

```
import java.util.Scanner;

public class MenuUpLowCase
{
   public static void main(String args[]) {
      Scanner in = new Scanner(System.in);
      System.out.println("Enter '1' to display upper case letters");
      System.out.println("Enter '2' to display lower case letters");

      System.out.print("Enter your choice: ");
      int ch = in.nextInt();

      switch (ch) {
         case 1:
         for (int i = 65; i <= 69; i++)
            System.out.println((char)i);
         break;

         case 2:
         for (int i = 118; i <= 122; i++)
```

```
            System.out.println((char)i);
         break;

         default:
         break;
      }
   }
}
```

11

Using switch case statement, write a menu driven program to perform the following tasks:
(a) To generate and print the letters from A to Z along with their Unicode.

Letters	Unicode
A	65
B	66
.....	.....
.....	.....
Z	90

(b) To generate and print the letters from z to a along with their Unicode.

Letters	Unicode
z	122
y	121
.....	.....
.....	.....
a	97

```
import java.util.Scanner;

public class LettersNUnicode
{
   public static void main(String args[])  {
      Scanner in = new Scanner(System.in);

      System.out.println("Enter 1 for A to Z with unicode");
      System.out.println("Enter 2 for z to a with unicode");

      System.out.print("Enter your choice: ");
      int ch = in.nextInt();
```

```
        switch (ch) {
            case 1:
                System.out.println("Letters" + "\t" + "Unicode");
                for(int i = 65; i <= 90; i++)
                    System.out.println((char)i + "\t" + i);
                break;

            case 2:
                System.out.println("Letters" + "\t" + "Unicode");
                for (int i = 122; i >= 97; i--)
                    System.out.println((char)i + "\t" + i);
                break;

            default:
                System.out.println("Incorrect Choice");
        }
    }
}
```

12

Write a program in Java to display the following patterns:

(i)

```
A
ab
ABC
abcd
ABCDE
```

```
public class Pattern
{
    public static void main(String args[]) {
        for (int i = 65; i < 70; i++) {
            for (int j = 65; j <= i; j++) {
                if (i % 2 == 0)
                    System.out.print((char)(j+32));
                else
                    System.out.print((char)j);
            }
```

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

(ii)

```
ZYXWU
ZYXW
ZYX
ZY
Z
```

```
public class Pattern
{
    public static void main(String args[]) {
        for (int i = 86; i <= 90; i++) {
            for (int j = 90; j >= i; j--) {
                System.out.print((char)j);
            }
            System.out.println();
        }
    }
}
```

(iii)

```
ABCDE
ABC
A
```

```
public class Pattern
{
    public static void main(String args[]) {
        for (int i = 69; i >= 65; i = i - 2) {
            for (int j = 65; j <= i; j++) {
                System.out.print((char)j);
            }
            System.out.println();
        }
    }
}
```

(iv)

PRTV
PRT
PR
P

```
public class Pattern
{
   public static void main(String args[]) {
      for (int i = 86; i >= 80; i = i - 2) {
         for (int j = 80; j <= i; j = j + 2) {
            System.out.print((char)j);
         }
         System.out.println();
      }
   }
}
```

(v)

A*B*C*D*E*
A*B*C*D*
A*B*C*
A*B*
A*

```
public class Pattern
{
   public static void main(String args[]) {
      for(int i = 69; i >= 65; i--) {
         for (int j = 65; j <= i; j++) {
            System.out.print((char)j + "*");
         }
         System.out.println();
      }
   }
}
```

(vi)

a a a a a
b b b b b

A A A A A
B B B B B

```
public class Pattern
{
    public static void main(String args[]) {
        int a = 97;
        for (int i = 1; i <= 4; i++) {
            for (int j = 1; j <= 5; j++) {
                System.out.print((char)a + " ");
            }
            a++;
            if (i == 2)
                a = 65;
            System.out.println();
        }
    }
}
```