Question 01

```
class Example{
	public static void main(String args[]){
		System.out.println("Darshana Pubudu Keerthirathna");
	}
};
```

```
K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\01>java Example
Darshana Pubudu Keerthirathna
```

Question 02

```
class Example{
	public static void main(String args[]){
		System.out.println("Darshana Pubudu Keerthirathna");
		System.out.println("15,");
		System.out.println("Tilton Housing Scheme,");
		System.out.println("Pallegama");
		System.out.println("Nawalapitiya");
		System.out.println("keerthi.mac@gmail.com");
		System.out.println("0716521436");
	}
}
```

```
K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\02>java Example
Darshana Pubudu Keerthirathna
15,
Tilton Housing Scheme,
Pallegama
Nawalapitiya
keerthi.mac@gmail.com
0716521436
```

Question 03

```
class Example{
	public static void main(String args[]){
		System.out.println("*");
		System.out.println("* *");
		System.out.println("* * *");
		System.out.println("* * * *");
	}
}
```

```
K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\03>java Example
*
* *
* * *
* * * *
```

Question 04

```
class Example{
	public static void main(String args[]){
		System.out.println("      299");
		System.out.println("+     800");
		System.out.println("----------");
		System.out.println("     1099");
		System.out.println("==========");
	}
}
```

```
class Example{
        public static void main(String args[]){
                System.out.println("       299");
                System.out.println("+      800");
                System.out.println("----------");
                System.out.println("      1099");
                System.out.println("==========");
        }
}
```

```
K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\04>java Example
      299
+     800
----------
     1099
==========
```

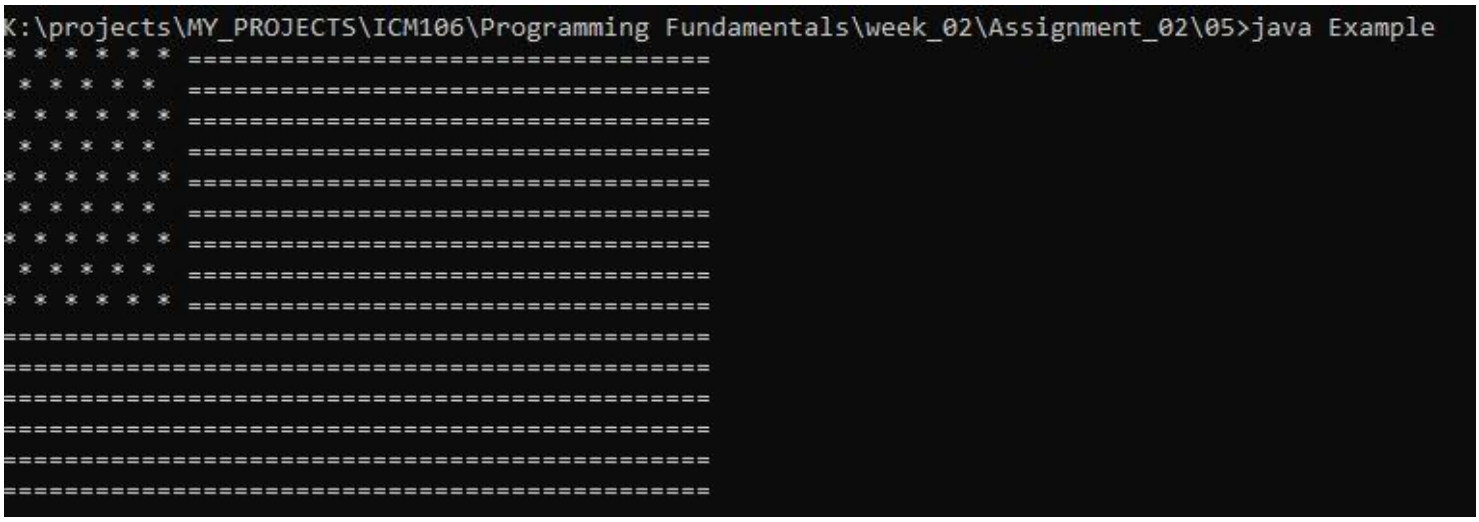
```
K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\04>java Example
       299
+      800
----------
      1099
==========
```

Question 05

```
class Example{
	public static void main(String args[]){
		System.out.print("* * * * * *");
		System.out.println(" ==================================");
		System.out.print(" * * * * * ");
		System.out.println(" ==================================");
		System.out.print("* * * * * *");
		System.out.println(" ==================================");
		System.out.print(" * * * * * ");
		System.out.println(" ==================================");
		System.out.print("* * * * * *");
		System.out.println(" ==================================");
		System.out.print(" * * * * * ");
		System.out.println(" ==================================");
		System.out.print("* * * * * *");
		System.out.println(" ==================================");
		System.out.print(" * * * * * ");
		System.out.println(" ==================================");
		System.out.print("* * * * * *");
		System.out.println(" ==================================");
		System.out.println("==========================================");
		System.out.println("==========================================");
		System.out.println("==========================================");
		System.out.println("==========================================");
		System.out.println("==========================================");
		System.out.println("==========================================");
	}
}
```

K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\05>java Example

```
* * * * * * ==================================

 * * * * *  ==================================

* * * * * * ==================================

 * * * * *  ==================================

* * * * * * ==================================

 * * * * *  ==================================

* * * * * * ==================================

 * * * * *  ==================================

* * * * * * ==================================

==============================================

==============================================

==============================================

==============================================

==============================================

==============================================
```



Question 06

Program A

K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\06>java Example

Institute of Computer Engineering Technology

223 A,

Galle Road,

Panadura.

Program B

K:\projects\MY_PROJECTS\ICM106\Programming Fundamentals\week_02\Assignment_02\06>java Example1

Institute of Computer Engineering Technology

223 A,Galle Road,Panadura.

Question 07

Generally we use println() & print() both to print something in console. But key difference is if we use println() after this function executes, curser goes to new line. If we use print(), it dose not start with new line but curser start next to previously printed line.

println() – curser start with new line

print() – curser next to previous printed line.

Like Question 06 example, in program A used .println() & next print started with new line.

```
System.out.println("Institute of Computer Engineering Technology");

System.out.println("223 A,");

System.out.println("Galle Road,");

System.out.println("Panadura.");
```

Institute of Computer Engineering Technology

223 A,

Galle Road,

Panadura.

Like Question 06 example, in program B used .print() & next print started next to previously printed line .

```
System.out.println("Institute of Computer Engineering Technology");

System.out.print("223 A,");

System.out.print("Galle Road,");

System.out.print("Panadura.");
```

Institute of Computer Engineering Technology

223 A,

Galle Road,

Panadura.

Question 08

("a") is a string literal

('a') is a character literal.

Question 09

Line 1: The number 7 is an integer literal.

Line 2: The number 7 is a floating-point literal.

Line 3: The string "7" is a string literal.

Line 4: The character '7' is a character literal.

Question 10

Integer literals are whole numbers, like 10, -25.

Floating-point literals are decimal numbers with fractional parts, like 3.14, 0.000001.

Character literals are single characters, like 'a', 'B', '$'.

String literals are sequences of characters, like "Hello", "World", or "".

Boolean literals are logical values, either true or false.

Question 11

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\11>java Example

1100100

100

294976

17826048

Question 12

valid statements as following with Explanation.

System.out.println(0B11100100); //Line 1

Output: 228

0B prefix indicates that the number is a binary literal. In this case, the binary number 11100100 represents the decimal number 228.

System.out.println(0b11100100); //Line 2

Output: 228

The 0b prefix is an alternative way to represent a binary literal & out put is same as before.

System.out.println(0144); //Line 4

Output: 100

This line prints the octal number 0144 to the console. we can store octal numbers by just adding 0 while initializing. the octal number 144 represents the decimal number 100.

System.out.println(0x64); //Line 6

Output: 100

0x in the beginning indicates number is hexadecimal. Hexadecimal 64 is 100 represents decimal.

System.out.println(0xabc); //Line 7

Output: 2748

Like previous Line 6, Hexadecimal abc is 2748 represents decimal.

System.out.println(0Xfffffff); //Line 10

Output: 268435455

Hexadecimal fffffff is 268435455 represents decimal.

Question 13

```
E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\13>java Example
A
BCD

EF
G
H
```

Question 14

```
class Example{
	public static void main(String args[]){
		System.out.println("i.\tiCM - iCET CERTIFIED MASTER\n\n");
		System.out.println("ii.\tiCM - iCET\n");
		System.out.println("   \tiCM - iCET\n\tCERTIFIED\n\tMASTER\n\n");
		System.out.println("iii.\tiCM\n\n\tiCET CERTIFIED MASTER");
	}
}
```

Question 15

System.out.println("Hello\nJAVA");
Hello

JAVA

\n – Used for the new line

System.out.println("Hello\tJAVA");
Hello JAVA

\t – Used for tab space between hello World

System.out.println("Hello\bJAVA");
HellJAVA

\b – Used for backspace and “o” removed because of that

System.out.println("\\Hello JAVA\\");
\Hello JAVA

\\ - Escaping one ‘\’ in both sides

System.out.println("\"Hello\nJAVA\"");
"Hello

JAVA"

\” – used for escape “ character in both sides. If not program will throw error.

\n – Used for new line

System.out.println("\'Hello\nJAVA\'");
'Hello

JAVA'

\’ – used for escape ‘ character in both sides. If not program will throw error.

\n – Used for new line

Question 16

```
class Example {

public static void main(String args[]){

		System.out.println("a.Java is a typed
language\nb.AB\"CD\nc.AB\\CD\nd.C:\\Windows\\Program\ne.AB\\\"CD\nf.AB\\\\\"\"CD\ng.AB\\\\nCD\nh.AB\\\\tCD\n
i.AB\\\\bCD");

	}

}
```

Question 17

```
class Example {

	public static void main(String args[]){

		System.out.println("( )/    |    |    |");

		System.out.println("  | |   | |     | |");

		System.out.println("| | |   |   |   | |");

		System.out.println("| | |   | |     | |");

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

	}

}
```

Question 18

```
class Example {

	public static void main(String args[]){

		System.out.println("      x");

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

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

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

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

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

		System.out.println("''''''''''''''''");

		System.out.println("   ___|_|___");

	}

}
```

Question 19

```
	public static void main(String args[]){
		System.out.println("      +\"\"\"\"\"+");
		System.out.println("     [| O O |]");
		System.out.println("      |  ^  |");
		System.out.println("      | \'-\' |");
		System.out.println("      +\'\'\'\'\'+");
		System.out.println("     |||||||||");
		System.out.println("/\\/\\/|||||||||||\\/\\/\\");
		System.out.println("    ||||||||||||");
		System.out.println("   ||||||||||||||");
		System.out.println("    ||||||||||||");
		System.out.println("     |||||||||");
		System.out.println("      /\\   /\\");
	}
}
```

Question 20

Line 01 – Initiate integer Variable **i**

Line 02 – Assign the integer value of 103 for **i** variable.

Line 03 – printing i variable to console and output is 103.

Question 21

```
class Example {
	public static void main(String args[]){
		int x,y;
		x=102;
		y=103;
		System.out.print(y+"  "+x);
	}
}
```

Question 22

Compile time error

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\22>javac Example.java

Example.java:4: error: variable x might not have been initialized

```
    System.out.println(x);
                       ^
```

1 error

Question 23

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\23>javac Example.java

Example.java:7: error: variable y is already defined in method main(String[])

```
        int y=200;
            ^
```

1 error

Question 24

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\24>java Example

100

200

100

300

Reason for variable **y** give 200 & 300 In the line 6, **300** is assigned to **y** variable again.

Question 25

B) x=100;

x+1 Cannot be insert because not assigned any value to **x** variable

int y = 100; in this case, not assigned any value to **x** variable

int x=200; cannot initiate **x** variable again.

Insert nothing. – will throw a error because assigned any value to **x** variable

Question 26

D. Compile error at line 6

Question 27

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\27>java Example

1020

30

Line 01 - operation is string literal concatenation. Means 10 & 20 put there as a strings.

Line 02 - arithmetic operation (Add) of two Integer literals.

Question 28

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\28>java Example

60

10+20+30

10+2030

102030

102030

3030

102030

Question 29

A) 6 - arithmetic operation of Integer literals.
B) 123 - string literal concatenation
C) 150 - each character is treated as its ASCII value because you are using single quotes ('). The ASCII value for '1' is 49, '2' is 50, and '3' is 51.
D) 1 2 3 – character literal concatenation with space
E) 198 - each character is treated as its ASCII value because you are using single quotes ('). The ASCII value for 'A' is 65, 'B' is 66, and 'C' is 67.
F) ABC - string literal concatenation
G) 365 – ASCII value for 'A' is 65. Whole operation would be arithmetic operation of Integer literals. (65+100+200)
H) A B C - character literal concatenation with space

Question 30

Instead of hardcoding the variable value in program, Scanner is use for get the keyboard input for assign the **i** value.

** Scanner initiation missing the given code.

Question 31

```
import java.util.*;
	class Example{
		public static void main(String[] args){

		//a)
		int x,y;
		Scanner input=new Scanner(System.in);
		System.out.print("Enter X Value :");
		x=input.nextInt();
		System.out.print("Enter Y Value :");
		y=input.nextInt();

		//b).
		System.out.println("1st input-"+x);
		System.out.println("2nd input-"+y);

		//c).
		int z;
		z=x+y;
		System.out.println(x+" "+y+" = "+z);

	}
}
```

Question 32

```
import java.util.*;
        class Example{
                public static void main(String[] args){

                int x;
                Scanner input=new Scanner(System.in);
                System.out.print("Enter X Value :");
                x=input.nextInt();

                System.out.println("Input number:"+x);
                System.out.println(x+""+x+""+x);
                System.out.println(x*3);

        }
}
```

Question 33

```
import java.util.*;
        class Example{
                public static void main(String[] args){
                int p,q,r,s,t;
                Scanner input=new Scanner(System.in);
                System.out.println("Enter your Marks");
                System.out.print("Combined Maths :");
                p=input.nextInt();
                System.out.print("Chemistry :");
                q=input.nextInt();
                System.out.print("Physics :");
                r=input.nextInt();
                System.out.print("English :");
                s=input.nextInt();
                t=p+q+r+s;
                System.out.println("\n\n");
                System.out.println("Combined Maths-"+p);
                System.out.println("Chemistry    -"+q);
                System.out.println("Physics      -"+r);
                System.out.println("English      -"+s);
                System.out.println("Total        -"+t);

        }
}
```

Question 34

```
import java.util.*;
        class Example{
                public static void main(String[] args){
                int p,q,r;
                Scanner input=new Scanner(System.in);
                System.out.print("Enter Green Value :");
                p=input.nextInt();
                System.out.print("Enter Red Value :");
                q=input.nextInt();
                System.out.print("Enter Blue Value :");
                r=input.nextInt();
                System.out.println("Inversion of given color -["+(255-p)+","+(255-q)+","+(255-r)+"]");
        }
}
```

Question 35

Data Type	Size	Description
byte	1 byte	-128 to 127
short	2 bytes	-32,768 to 32,767
int	4 bytes	-2,147,483,648 to 2,147,483,647
long	8 bytes	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	4 bytes	-3.4028235E38 to 3.4028235E38
double	8 bytes	-1.7976931E308 to 1.7976931E308
boolean	1 byte	true or false
char	2 bytes	Stores single characters (e.g., 'a', 'A', '$', '1')

Question 36

A. byte b1=100; - This statement is legal because 100 is within the range of the byte data type, which is -128 to 127.

B. byte b2=128; - This statement is legal because 128 is also within the range of the byte data type.

C. byte b3=-128; - This statement is legal because -128 is within the range of the byte data type.

D. byte b4=0; - This statement is legal because 0 is within the range of the byte data type.

E. short s1=100; - This statement is legal because 100 is within the range of the short data type, which is -32768 to 32767.

F. short s2=32768; - This statement is legal because 32768 is the maximum value of the short data type.

G. short s4=-32768; - This statement is legal because -32768 is the minimum value of the short data type.

H. char c1='A'; - This statement is legal because 'A' is a valid character literal.

I. char c2='7'; - This statement is legal because '7' is a valid character literal.

J. char c3='AB'; - This statement is not legal because character literals can only contain one character.

K. char c4=7; - This statement is legal because 7 is the ASCII code for the character '7'.

L. int x=10.6; - This statement is not legal because the int data type can only store integer values.

M. double d1=10045; - This statement is legal because 10045 is within the range of the double data type.

N. double d2=2023.03; - This statement is legal because 2023.03 is within the range of the double data type.

O. boolean b1=true; - This statement is legal because true is a valid value for the boolean data type.

P. boolean b2=False; - This statement is not legal because False is not a valid keyword in Java.

Q. boolean b3=false; - This statement is legal because false is a valid value for the boolean data type.

R. boolean b5=" true"; - This statement is not legal because the boolean data type can only store true or false values.

S. boolean b6=0; - This statement is not legal because the boolean data type can only store true or false values.

T. Boolean isValid=50>10; - This statement is legal because it assigns the result of the comparison 50>10 to the Boolean variable isValid.

Question 37

B. l = 2187523347;

error: integer number too large

Question 38

@name -Identifiers cannot start with '@'.

New - "new" is a reserved keyword

user-input - Identifiers cannot contain hyphens ("-"). Use underscores (_) instead.

**$percent -** Identifiers cannot start with '$'.

My Variable - Identifiers cannot have spaces. Use underscores (_) or camelCase instead.

Boolean - "Boolean" is a class name in many programming languages and should not be used as an identifier.

123num - Identifiers cannot start with a digit.

java.org - Identifiers cannot contain dots (.) or special characters like '/'.

Question 39

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\39>java Example

32767

-32768

Question 40

E:\dev\ICM106\Programming Fundamentals\week_02\Assignment_02\40>java Example

A

66

A1

a

98

a1

Question 41

a) 6 – arithmetic (add) operation of Integer literals.
b) 54 - '2' is treated as a character, and since it is surrounded by numeric additions, it is converted to its ASCII value (which is 50). So, the expression becomes 1 + 50 + 3.
c) 54 - Like the previous case, '3' is treated as a character and is converted to its ASCII value (which is 51). So, the expression becomes 1 + 2 + 51
d) 150 - Each character ('1', '2', '3') is converted to its ASCII value and then added together (49 + 50 + 51).
e) 54 - '1' is converted to its ASCII value (49), and then the numeric additions are performed (49 + 2 + 3).
f) 'A' is not defined. So got compile error
g) 135 - 'h' is treated as a character and converted to its ASCII value (104), then the numeric additions are performed (1 + 104 + 30).
h) 198 - Each character ('A', 'B', 'C') is converted to its ASCII value and then added together (65 + 66 + 67)
i) 150 - each character ('1', '2', '3') is converted to its ASCII value and then added together (49 + 50 + 51).

Question 42

Question 43

a) This is a valid declaration, where a char variable a is assigned the Unicode character represented by '\u0061', which is the character 'a'.

d) valid declaration. It uses Unicode escape sequence '\u0061' to represent the character 'a'.

e) valid declaration. It declares a char variable a and assigns it the value 'a'.

Question 44

```
class Example{
        public static void main(String asrg[]){
            // Check if the value of 'a' is equal to the Unicode character '\u0061' (which is 'a')
            System.out.println(a == '\u0061'); // Output: true

            // Check if the Unicode character '\u0061' is equal to itself
            System.out.println(\u0061 == '\u0061'); // Output: true

            // Check if the Unicode character '\u0061' is equal to the decimal value 97
            System.out.println(\u0061 == 97); // Output: true

            // Assign the Unicode character '\u0041' (which is 'A') to the variable 'a'
            \u0061 = '\u0041';

            // Check if the character 'A' is equal to the Unicode character '\u0041'
            System.out.println('A' == '\u0041'); // Output: true

            // Check if the decimal value 65 is equal to the Unicode character '\u0041'
            System.out.println(65 == '\u0041'); // Output: true

            // Check if the decimal value 65 is equal to the value of 'a' (which is 'A' now)
            System.out.println(65 == a); // Output: true

            // Check if the Unicode character '\u0041' is equal to the value of 'a' (which is 'A' now)
            System.out.println('\u0041' == a); // Output: true
        }
}
```

Question 45

In line 1, the text "iCET" is directly specified within the System.out.println.

In line 2, a String variable s is declared and initialized with the value "connect intelligents…". Then, the value of this variable is printed using System.out.println(s).

Question 46

```
import java.util.*;

class Example{
	public static void main(String asrg[]){
		Scanner input= new Scanner(System.in);
		System.out.print("What is your name? ");
		String name=input.next();
		System.out.println("\"Hello, "+name+" nice to meet you!\"");
	}
}
```

Question 47

z is: 131y105z

Question 48

```
import java.util.*;


class Example{
	public static void main(String asrg[]){
		Scanner input= new Scanner(System.in);
		System.out.print("Enter your friend`s name: ");
		String name=input.next();
		System.out.print("Enter your friend`s age: ");
		int age=input.nextInt();
		System.out.print("Enter your friend`s living place: ");
		String place=input.next();
		System.out.println(name+" is my best friend. He is "+age+" years old and lives in the beautiful town of "+place+".");
	}
}
```

Question 49

```
import java.util.*;


class Example{
	public static void main(String asrg[]){
		Scanner input= new Scanner(System.in);
		System.out.print("Enter Subject 1 name: ");
		String sub_1=input.next();
		System.out.print(sub_1+" marks - ");
		int sub_1_marks=input.nextInt();

		System.out.print("Enter Subject 2 name: ");
		String sub_2=input.next();
		System.out.print(sub_2+" marks - ");
		int sub_2_marks=input.nextInt();

		System.out.print("Enter Subject 3 name: ");
		String sub_3=input.next();
		System.out.print(sub_3+" marks - ");
		int sub_3_marks=input.nextInt();
		System.out.println("\n\n");

		System.out.println(sub_1+"\t"+sub_1_marks);
		System.out.println(sub_2+"\t"+sub_2_marks);
		System.out.println(sub_3+"\t"+sub_3_marks);
		System.out.println("\n");
		System.out.println("Total\t "+(sub_1_marks+sub_2_marks+sub_3_marks));
	}
}
```

Question 50

```
import java.util.*;


class Example {
        public static void main(String args[]) {
                Scanner input = new Scanner(System.in);
                System.out.print("Input number 1 : ");
               int num1 = input.nextInt();
               System.out.print("Input number 2 : ");
               int num2 = input.nextInt();
                System.out.println(num1 + " " + num2);

                // Swap the values of num1 and num2
                int temp = num1;
               num1 = num2;
                num2 = temp;

                System.out.println(num1 + " " + num2);
          }
}
```