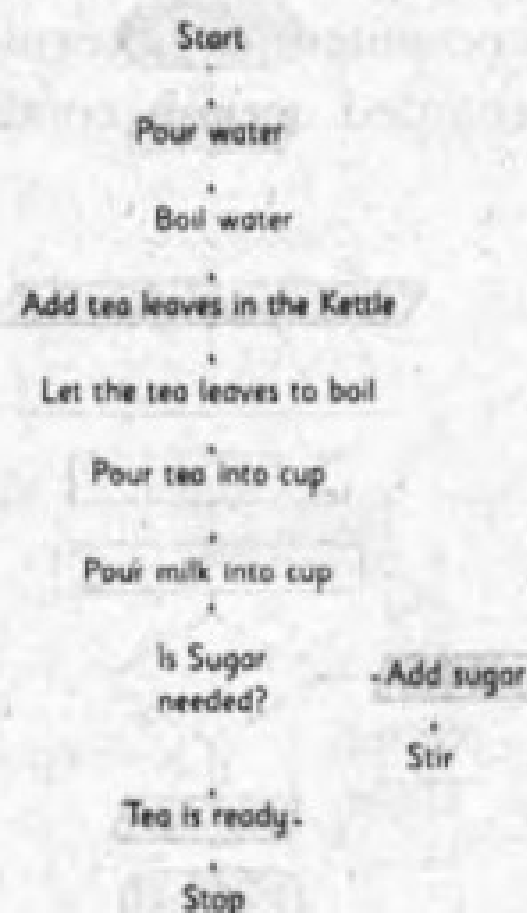


COMPUTER SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Q. Draw a flowchart to make a cup of tea.

Answer:

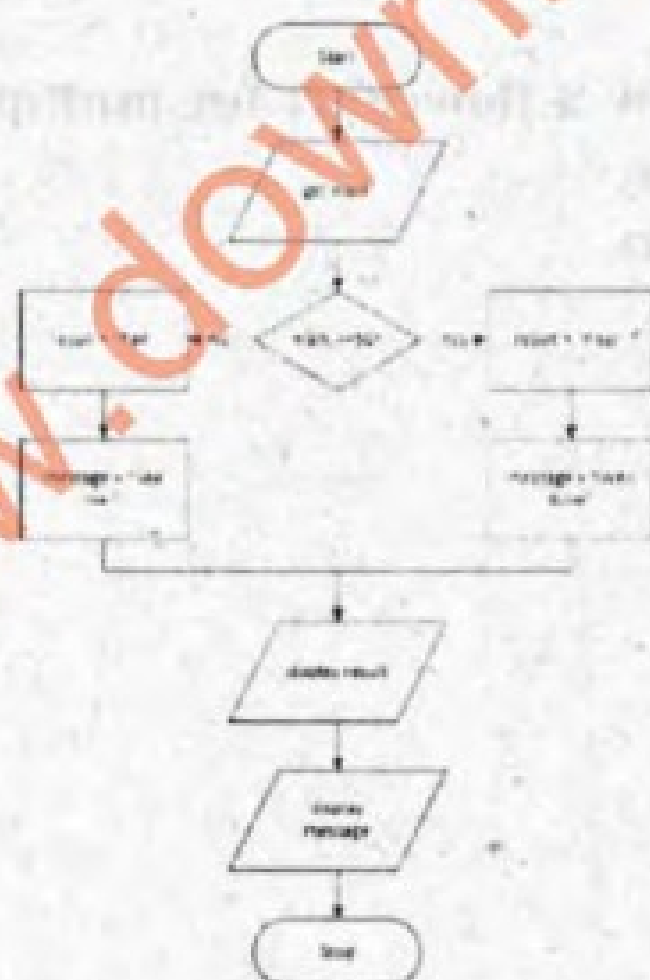


Q. Draw a flowchart for the given situation for pass and fail remarks on the basis of obtained marks.

Grading Criteria

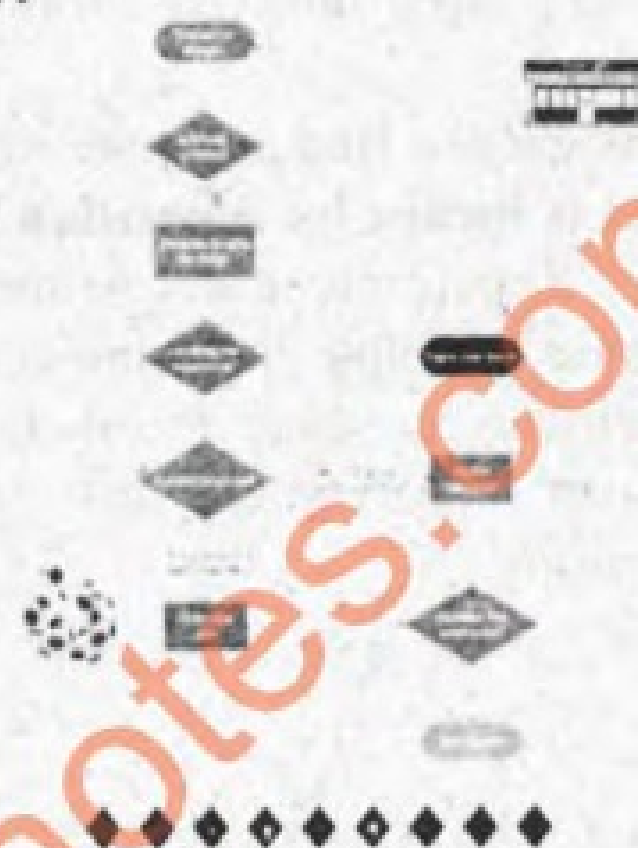
Marks obtained	Remarks
50% or more	Pass
Less Than 50%	Fail

Answer:



Q. Draw a flowchart "What to Eat for Lunch on Sunday"?

Answer:



Unit 4

PROGRAMMING

Solution to Exercise

❖ Short response questions:

Q. 1: How is information stored on computer?

Answer: All data stored on storage media, can be converted to a string of bits, otherwise known as binary digits. These binary digits have a value of 1 or 0, and the strings can make up photos, documents, audio and video. A byte is the most common unit of storage and is equal to 8 bits.

For example, Photographs are converted to a set of numbers that indicate the location, color and brightness of each pixel. Whereas convention numbers use ten digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9), binary numbers use two digits to represent all possible values. The

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conventions numbers 0-8 translate into binary numbers as: 0, 1, 10, 11, 100, 101, 110, 111 and 1000. With binary numbers, any value can be stored as a series of items which are either true (1) or false (0).



Q. 2: Convert the following decimal numbers to binary numbers:

- a) 13 b) 17
c) 21 d) 31
a) 13

Answer: Conversion of decimal number 13 into binary is:

$13 / 2 = 6$ with remainder 1
 $6 / 2 = 3$ with remainder 0
 $3 / 2 = 1$ with remainder 1
 $1 / 2 = 0$ with remainder 1

Hence, the decimal number 13 in binary is $(1101)_2$.

- b) 17

Answer: Conversion of decimal number 17 into binary is:

$17 / 2 = 8$ with remainder 1
 $8 / 2 = 4$ with remainder 0
 $4 / 2 = 2$ with remainder 0
 $2 / 2 = 1$ with remainder 0
 $1 / 2 = 0$ with remainder 1

Hence, the decimal number 17 in binary is $(10001)_2$.

- c) 21

Answer: Conversion of decimal number 21 into binary is:

$21 / 2 = 10$ with remainder 1
 $10 / 2 = 5$ with remainder 0
 $5 / 2 = 2$ with remainder 1
 $2 / 2 = 1$ with remainder 0
 $1 / 2 = 0$ with remainder 1

Hence, the decimal number 21 in binary is $(10101)_2$.

- d) 31

Answer: Conversion of decimal number 31 into binary is:

$31 / 2 = 15$ with remainder 1
 $15 / 2 = 7$ with remainder 1
 $7 / 2 = 3$ with remainder 1
 $3 / 2 = 1$ with remainder 1
 $1 / 2 = 0$ with remainder 1

Hence, the decimal number 31 in binary is $(11111)_2$.

Q. 3: Convert the following binary numbers to decimal numbers:

- a) 1001 b) 1100
c) 1000 d) 1010
a) 1001

Answer: Conversion of binary number 1001 into decimal is:

$$(1001)_2 = 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 8 + 0 + 0 + 1 = (9)_{10}$$

OR

1	0	0	1
2^3	2^2	2^1	2^0
8	0	0	1
$8 + 0 + 0 + 1$			
9			

Hence, the binary number 1001 into decimal is $(9)_{10}$.

- b) 1100

Answer: Conversion of binary number 1100 into decimal is:

$$(1100)_2 = 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 8 + 4 + 0 + 0 = (12)_{10}$$

OR

1	1	0	0
2^3	2^2	2^1	2^0
8	4	0	0
$8 + 4 + 0 + 0$			
12			

COMPUTER SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Hence, the binary number 1100 into decimal is $(12)_{10}$.

c) 1000

Answer: Conversion of binary number 1000 into decimal is:

$$(1000)_2 = 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 \\ = 8 + 4 + 0 + 0 = (8)_{10}$$

OR

1	0	0	0
2^3	2^2	2^1	2^0
8	0	0	0
$8 + 0 + 0 + 0$			
8			

Hence, the binary number 1000 into decimal is $(8)_{10}$.

d) 1010

Answer: Conversion of binary number 1010 into decimal is:

$$(1010)_2 = 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 \\ = 8 + 0 + 2 + 0 = (10)_{10}$$

OR

1	0	1	0
2^3	2^2	2^1	2^0
8	0	2	0
$8 + 0 + 2 + 0$			
10			

Hence, the binary number 1010 into decimal is $(10)_{10}$.

Q. 4: What is the difference in visual outcomes of Move and Glide commands?

Answer: This is the main difference between the move block and the glide block:

Most Motion blocks work instantly, but the glide block will move a sprite through in-between points. The tricky thing about the glide block is that it works over time, not at a specific speed.

Q. 5: Differentiate Repeat and Forever control commands. Give one example of problem for each where they can be used.

Answer: The instructions enclosed in the forever block keep on executing till the time the project is running or the Stop button is not pressed. The instructions enclosed in the repeat block execute for the given number of times. Scratch also has blocks that allow you to repeat blocks of code multiple times. The "repeat" block, found in the "Control" category, can repeat a set of statements as many times as you wish. The "repeat until" block in the "Control" category will repeat all of the statements inside of it until a condition that you set is met. And the "forever" block will repeat a set of statements forever, never stopping until you click on the red stop sign icon on the screen to end your program.



Q. 6: Write down the functions of the following commands if used with any sprite:



Answer:

glide 3 sec to mouse-pointer	change y by -20
The glide 3 sec to "mouse-pointer" notice the sprite turns towards the mouse pointer regardless of its position.	The block "change y by -20" move the sprite in terms of mentioned steps in y-axis.

COMPUTER SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Q. 7: What will the following two sets of codes do when Flag is processed? If possible, try running these sets of codes on a computer after your answer and compare.

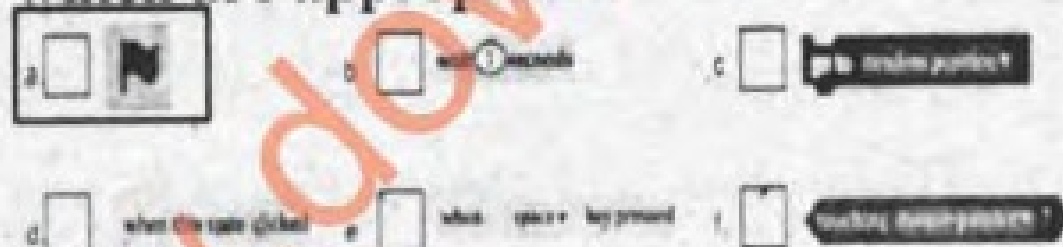


Answer:

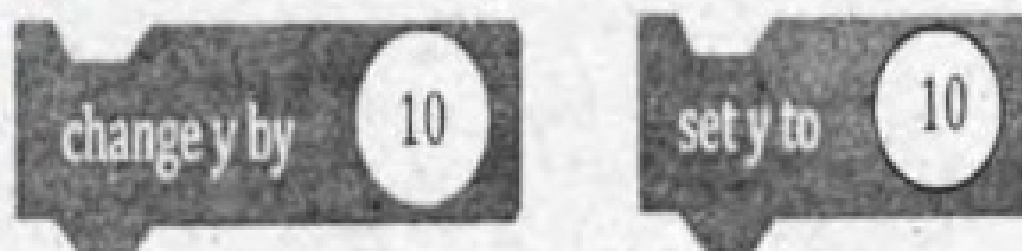
When clicked the Sprite move towards mouse pointer and after move the 5 steps just strike the boundary and wait for next direction of mouse-pointer.	In this case, Sprite just rotates in the direction of mouse pointer.



Q. 8: Which of the following can be used to start a set of codes? Tick which are appropriate.



Q. 9: What is the difference between the following two commands from Motion Category?

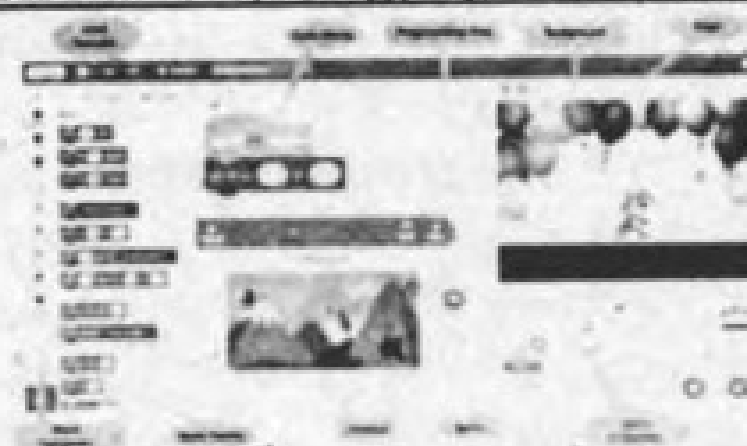


Answer:

The block of motion category "change y by 10" moves sprite in terms of mentioned steps in the y-axis.	The block of motion category "set y to 10" moves the sprite to the location of the mouse pointer or another sprite. Useful for keeping a set of sprites together. Moves sprite smoothly to a specified position over a specified length of time. One downside is that it pauses the script while the sprite is gliding.

Q. 10: Label the appropriate areas of the picture below using the given words:

Stage, Sprite, Programming area, Block Palette, Flag, Sprite Properties



Some Extra Questions/Answers

- ❖ Multiple choice questions:
 1. Background is selected from _____ of the screen:
 - a. Upper Right Corner
 - b. Bottom Right Corner
 - c. Upper Left Corner
 - d. Bottom Left Corner

COMPUTER SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

2. Program is written at

- a. Design Time
- b. Planning Time
- c. Implementation Time
- d. Analysis Time

3. Which of the following is the actual working space where you can drag and drop Code Blocks that are to be executed.

- a. Block Palette
- b. Backdrop
- c. Programming Area
- d. Stage

4. The process of finding and removing error is called:

- a. Decomposition
- b. Debugging
- c. Brainstorming
- d. Programming

5. _____ is an act that the program is familiar with and respond accordingly:

- a. Order
- b. Variable
- c. Event
- d. Stage

Q. Define computer program.

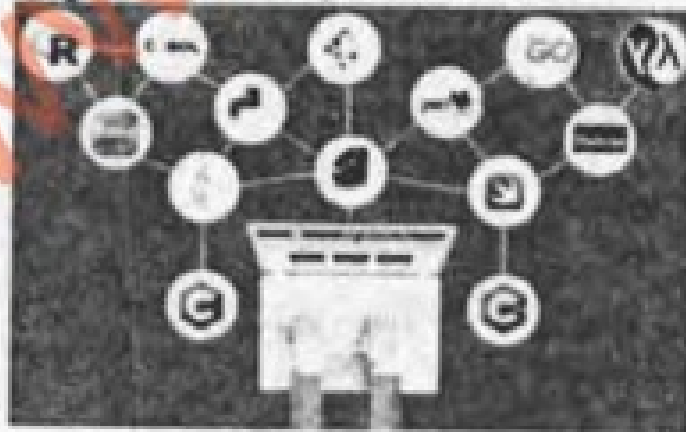
Answer: A computer program is a sequence of instructions that are to be executed by a computer.

Q. Define computer code.

Answer: It is a set of statements that are developed on any programming language according to the syntax.

Q. What is a programming language?

Answer: A programming language is any set of rules and commands that is used to develop computer program. For example: Scratch, Python, Java, JavaScript, C, C++, and C#.



Q. Define programming area.

Answer: Programming area/script area is the actual working space where you can drag and drop Code Blocks that are to be executed.

Q. Define stage.

Answer: The stage/display area is the space where result of the selected code can be seen.

Q. Define event.

Answer: An event is an act that the program is familiar with and respond accordingly.

Q. Define debugging.

Answer: The process of finding and removing error is called debugging.

Q. Construe the meaning of different colors of Code Blocks in Scratch.

Answer: Block categories are the way blocks are sorted in Scratch's block palette. Blocks are categorized based on their functionality, and blocks within the same category share the same color. The separation of color among categories allows better distinction of the parts of a project and increases the ease of access. There are nine main block categories in Scratch.



Q. How to convert an algorithm into a program?

Answer:

Steps of Algorithm:	Steps in Scratch Program
• Input x,y	Step 1:
• x 8	Step 2:
• y 5	Step 3:
• Subtract y from x	Program Output:
• Result 3	

COMPUTER SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Q. Develop a project to bounce a moving ball against outside walls.

Answer: To create a bouncing ball in Scratch, we are going to create a custom sprite that has 5 costumes. A costume in Scratch is a unique drawing or pose of a sprite. So, you can add multiple costumes to any sprite and give the sprite a different look or pose when it turns a certain direction (say, left or right), etc.

1. Hover over "Choose a Sprite" and click "Paint."

2. Name the costume "bounce-1."

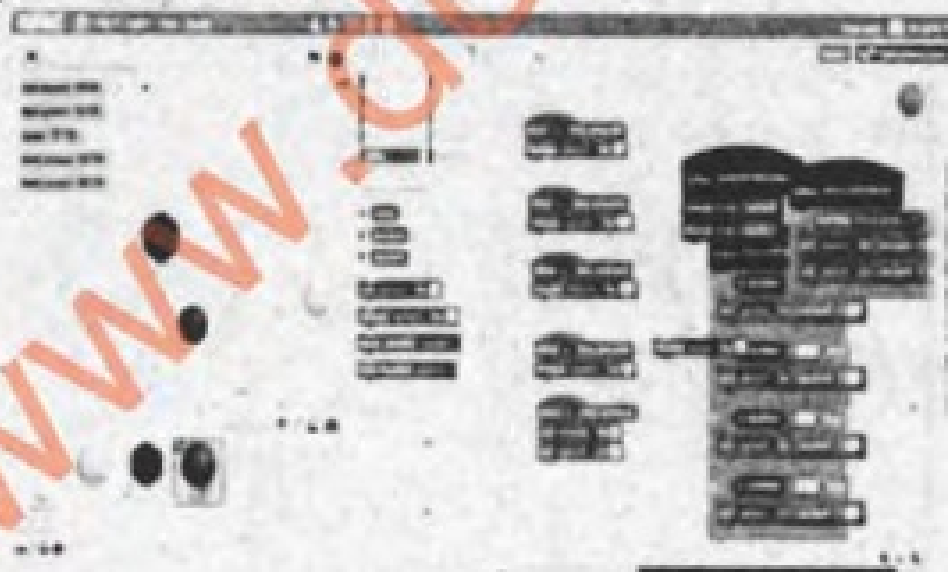
3. Draw a medium-sized circle with a dark color and no outline.

4. Select the circle and line it up with the center of the canvas.

5. Right-click the costume and duplicate it 4 times until there are costumes named "bounce-1" through "bounce-5."

6. With the Select tool, click and drag on the sides of the circles to make them "squash" and "stretch." Look at the images below for examples.

These costumes will mimic the look of a ball as it bounces up and down, and "squashes" as it makes impact with the ground/wall.



Q. Design a piano with eight keys. Attach a different sound with each key.

Answer:



Unit 5

DIGITAL CITIZENSHIP

Solution to Exercise

❖ **Multiple choice questions:**

1. The set of moral principles for responsible use of Internet, computer and ICT devices is known as:

- a. Computer Education
- b. Computer Ethics
- c. Online Safety
- d. Internet Surfing

2. If you back up your data, this is a _____ against the threat of data loss.

- a. firewall
- b. class
- c. security
- d. spammer

3. A _____ is someone who uses a computer and a network or