

CS118 Programming Fundamentals

Wednesday, Oct 14, 2020

Course Instructor

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Serial No:

1st Mid Term Exam

Total Time: 1 Hour

Total Marks: 50

Signature of Invigilator

Roll No

Section

Signature

DO NOT OPEN THE QUESTION BOOK OR START UNTIL INSTRUCTED.

Instructions:

1. Verify at the start of the exam that you have a total of **four (4)** questions printed on nine **(9)** pages including this title page.
2. Attempt all questions on the question-book and in the given order.
3. The exam is closed books, closed notes. Please see that the area in your threshold is free of any material classified as 'useful in the paper' or else there may a charge of cheating.
4. Read the questions carefully for clarity of context and understanding of meaning and make assumptions wherever required, for neither the invigilator will address your queries, nor the teacher/examiner will come to the examination hall for any assistance.
5. Fit in all your answers in the provided space. You may use extra space on the last page if required. If you do so, clearly mark question/part number on that page to avoid confusion.
6. Use only your own stationery and calculator. If you do not have your own calculator, use manual calculations.
7. Use only permanent ink-pens. Only the questions attempted with permanent ink-pens will be considered. Any part of paper done in lead pencil cannot be claimed for checking/rechecking.

	Q-1	Q-2	Q-3	Q-4	Total
Total Marks	5	15	15	15	50
Marks Obtained					

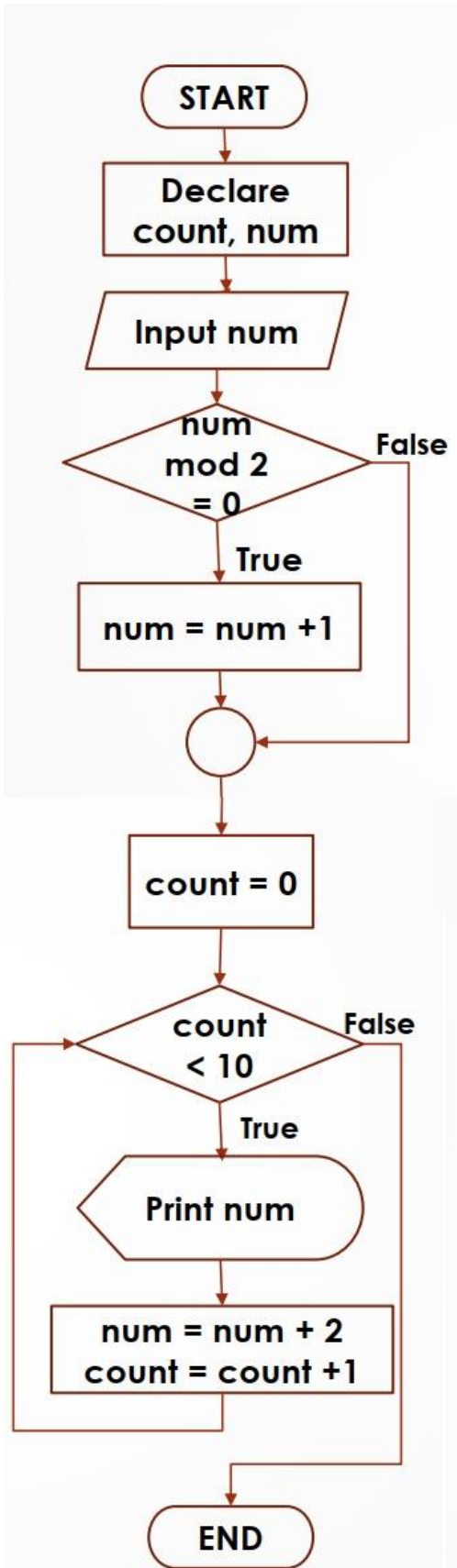
Vetted By: _____ Vetter Signature: _____

University Answer Sheet Required: No ☐ Yes ☐

Question #1:

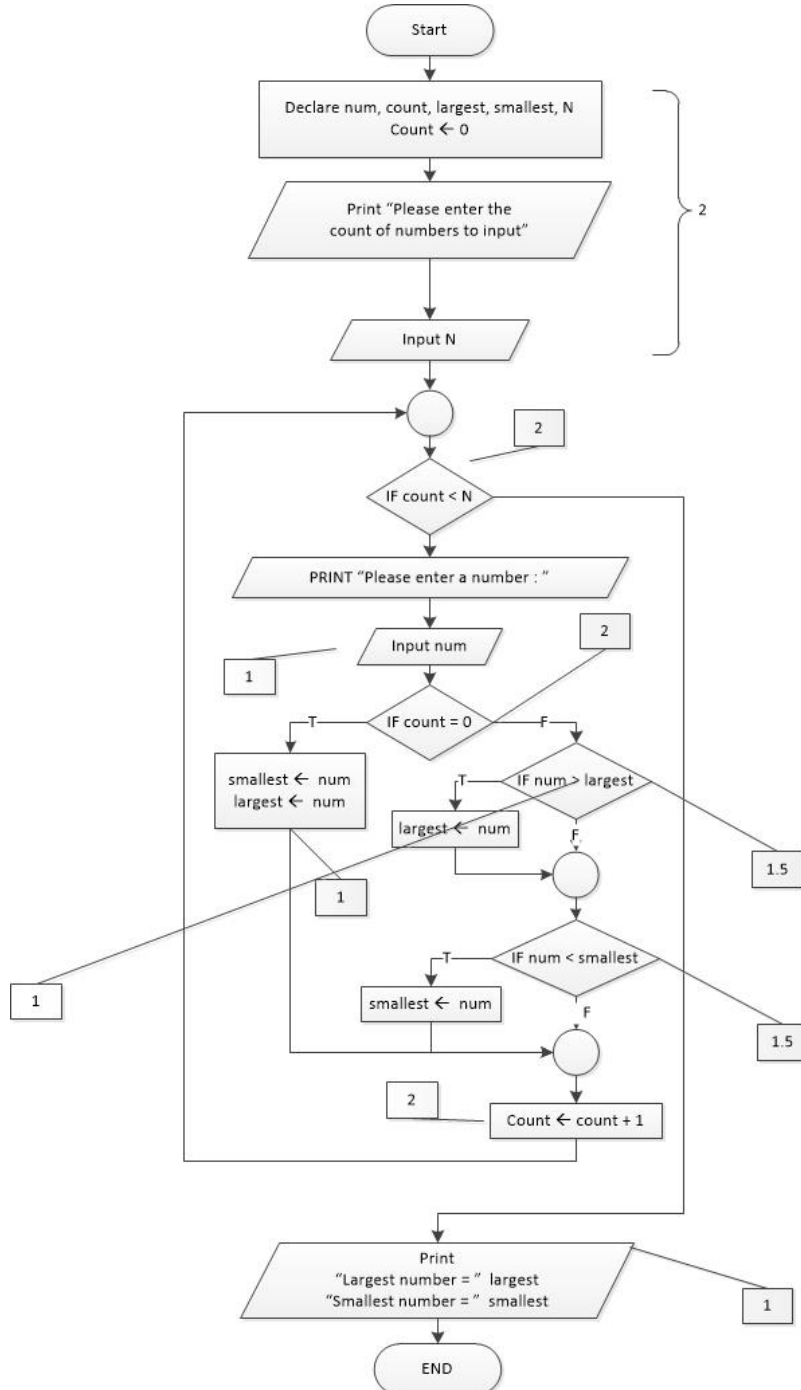
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Write pseudocode for the following flowchart:



1. Start
2. Declare count,num
3. Input num
4. If num mod2==0
 - 3.1 num=num+1
5. End if
6. Count=0
7. While count<10
 - 5.1 print num
 - 5.2 num=num+2
 - 5.3 count=count+1
8. End while
9. End

Draw a **flowchart** that will take N numbers from the user and will print the smallest and largest number out of those N numbers. User will first give how many numbers he wants to enter (N) and then will give numbers one by one on asking. After taking N numbers the program will display the smallest and largest number entered by the user.

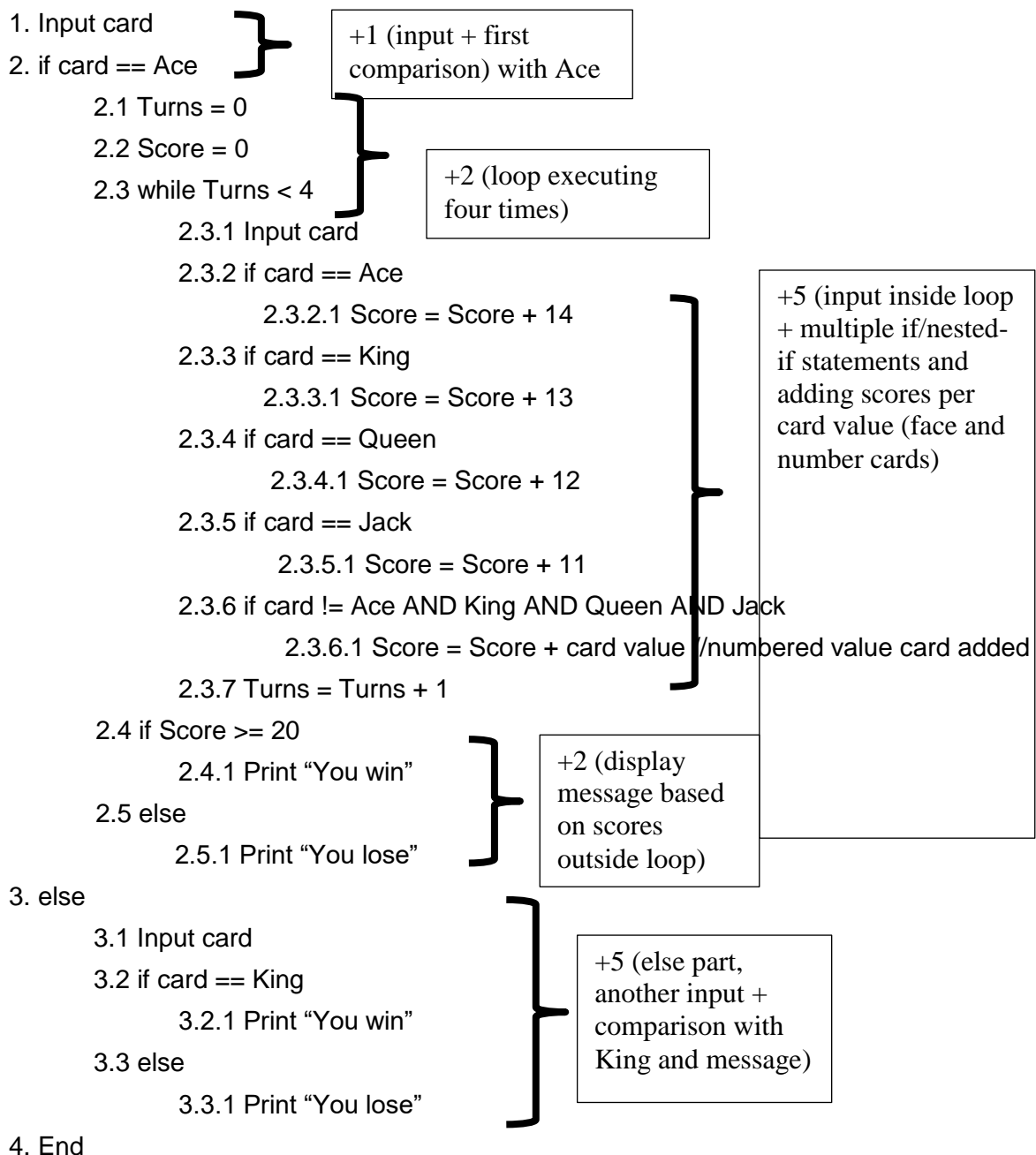


Question #3:

15

A deck of cards contains 52 cards in total, distributed into 4 suits namely Heart ♥, Diamond ♦, Club ♣ and Spade ♠. Each suit has the following 13 cards: 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack=11, Queen=12, King=13, and Ace=14 (card values for the four face cards are written with each of them). A player will draw a card randomly from a deck of cards and he/she can win the game in one of the following two modes. If the player draws an Ace card on the first turn, he/she can win the game by getting a score of at least 20 in the next four turns and will lose otherwise. However, if the player did not draw an Ace card on the first turn, he/she can win the game by drawing a King card on the second turn and will lose otherwise. Write **pseudo-code** for the given problem.

Solution:



Question #4:

15

Draw a flow chart for the following program:

A program is needed to calculate the electricity bill of a person. Your program should ask the user to input units of electricity consumed this month (this value must be greater than zero) and meter type ('c' for commercial and 'p' for personal). If the user inputs the wrong values, the program will ask to input the value again. The program should not proceed further until the user input acceptable values. The program should calculate and display the total bill in rupees. The customer needs to pay using the following bill calculation rules.

- For the first 100 units, the rate is 5 Rs. per unit.
- For units 101 to 300, the rate applied would be 8 Rs. per unit.
- 10 Rs. per unit rate should be applied from 301 to onwards.
- E.g. if units are 450 then three different rates would be applied Rs. 5 for the first 100 units Rs. 8 for the next 200 units and Rs. 10 for the remaining 150 units.
- If the meter type is commercial then a 3.5% tax should be also be added in the calculated bill.

Example-1:

Enter units consumed: 450

Enter meter type: C

Bill Breakup:

1-100 Units = 500 Rs.

101-300 Units = 1600 Rs.

301-450 Units = 1500 Rs.

Tax Applied: 126 Rs.

This month's total electricity bill is 3726 Rs.

Example-2:

Enter units consumed: 112

Enter meter type: P

Bill Breakup:

1-100 Units = 500 Rs.

101-112 Units = 96 Rs.

This month's total electricity bill is 596 Rs.

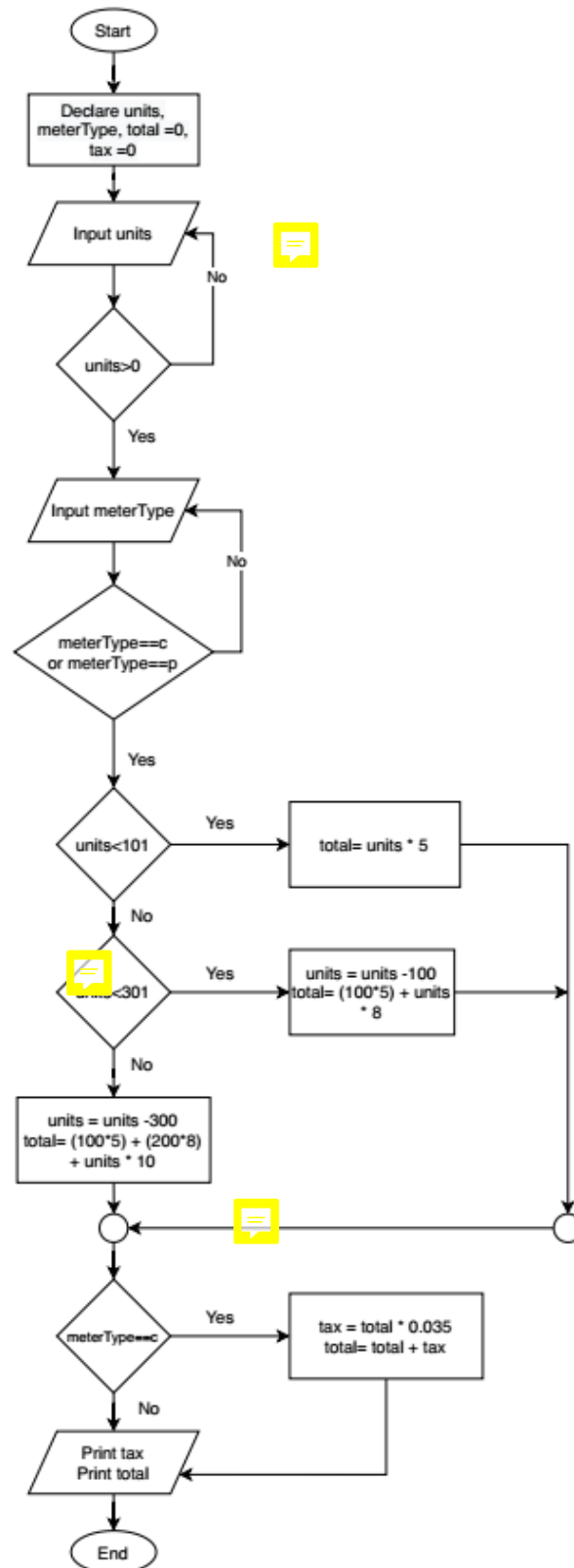


Table 1: Question 4 Marks Distribution

Sr.	Marks	Functionality	Detail
1	5	input validation loops	Loop until units>0 and Loop until meterType == c or p
2	5	correctly bill calculation	total bill calculation with tax for different cases
3	5	if structure for units buckets	3 if conditions for 3 different units buckets