SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE NAME : 20CS101 PROGRAMMING FOR PROBLEM SOLVING

I YEAR /I SEMESTER

Unit 1- INTRODUCTION TO PROBLEM SOLVING TECHNIQUES

Topic 9: Illustrative problems

Examples

check whether given number is +ve, -ve or zero.

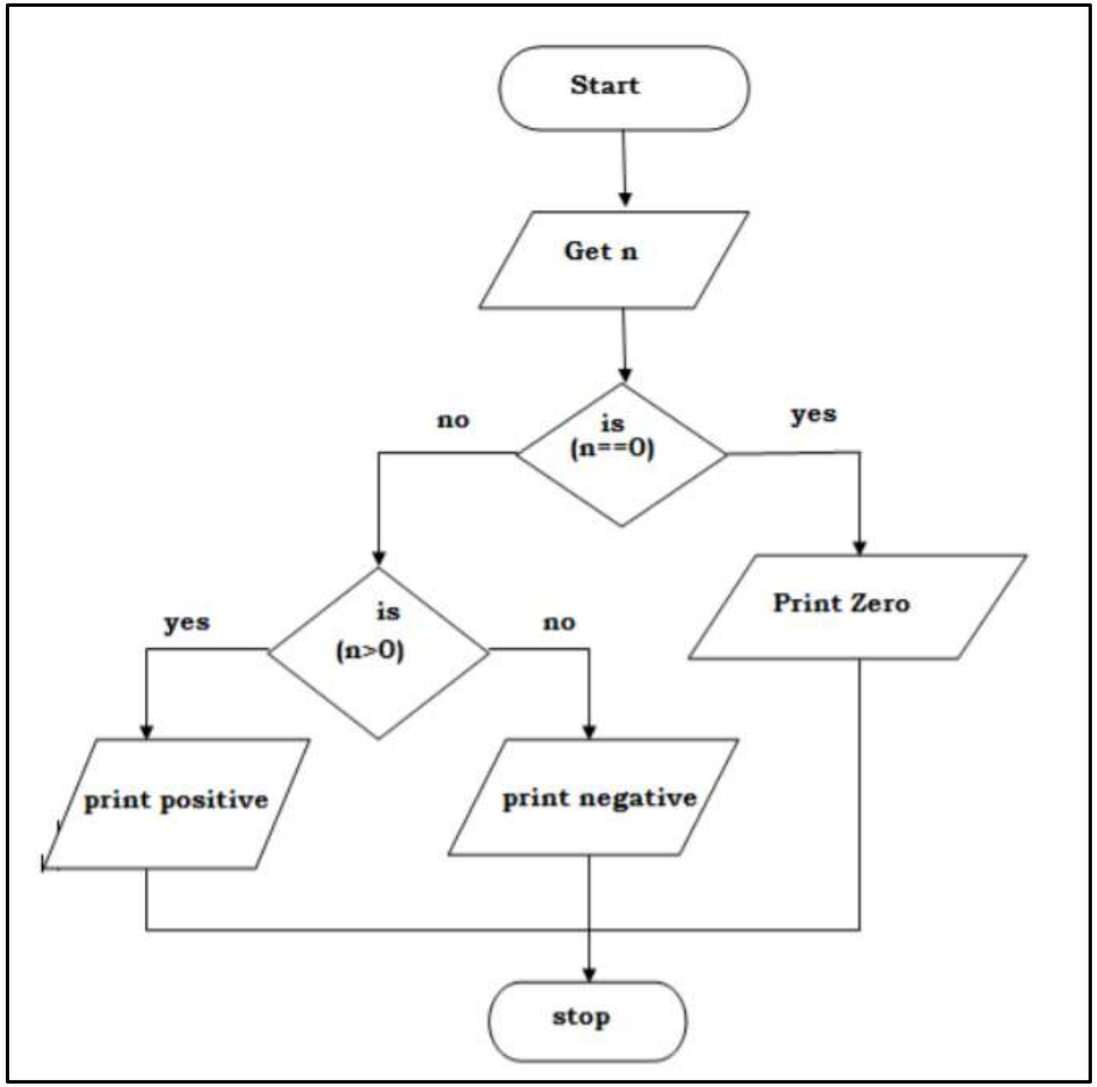
Write an algorithm to check whether given number is +ve, -ve or zero.
Step 1: Start
Step 2: Get n value.
Step 3: if (n ==0) print "Given number is Zero" Else goto step4
Step 4: if (n > 0) then Print "Given number is +ve"
Step 5: else Print "Given number is -ve"
Step 6: Stop

Conti…

```
BEGIN
GET n
IF(n==0) THEN
    DISPLAY " n is zero"
ELSE
    IF(n>0) THEN
        DISPLAY "n is positive"
    ELSE
        DISPLAY "n is  negative "
     END IF
END IF
END
```

Examples

check whether given number is +ve, -ve or zero.



Print all natural numbers up to n

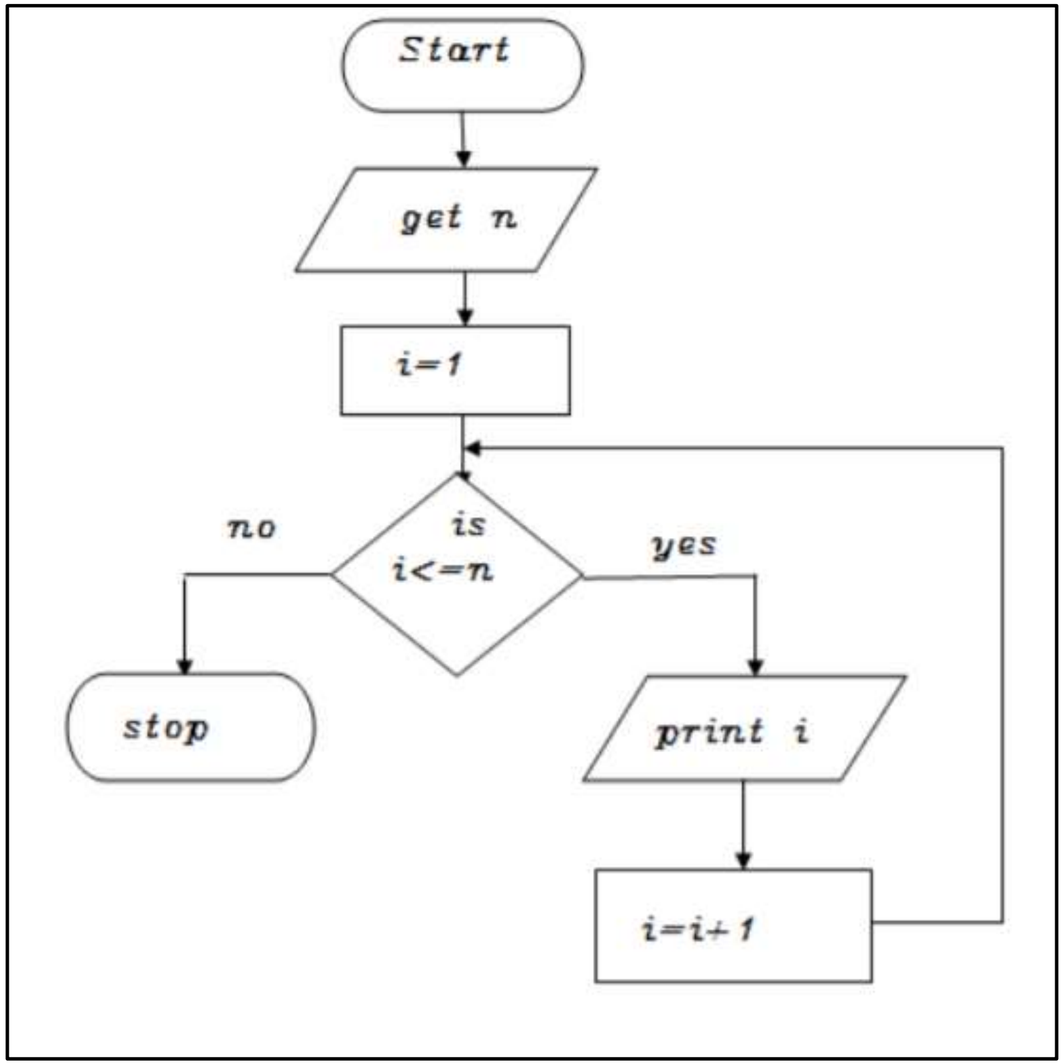
Write an algorithm to print all natural numbers up to n

Step 1: Start
Step 2: get n value.
Step 3: initialize i=1
Step 4: if (i<=n) go to step 5 else go to step 8
Step 5: Print i value
step 6 : increment i value by 1
Step 7: go to step 4
Step 8: Stop

```
BEGIN
GET n
INITIALIZE i=1
WHILE(i<=n) DO
    PRINT i
    i=i+1
ENDWHILE
END
```

Examples

check whether given number is +ve, -ve or zero.

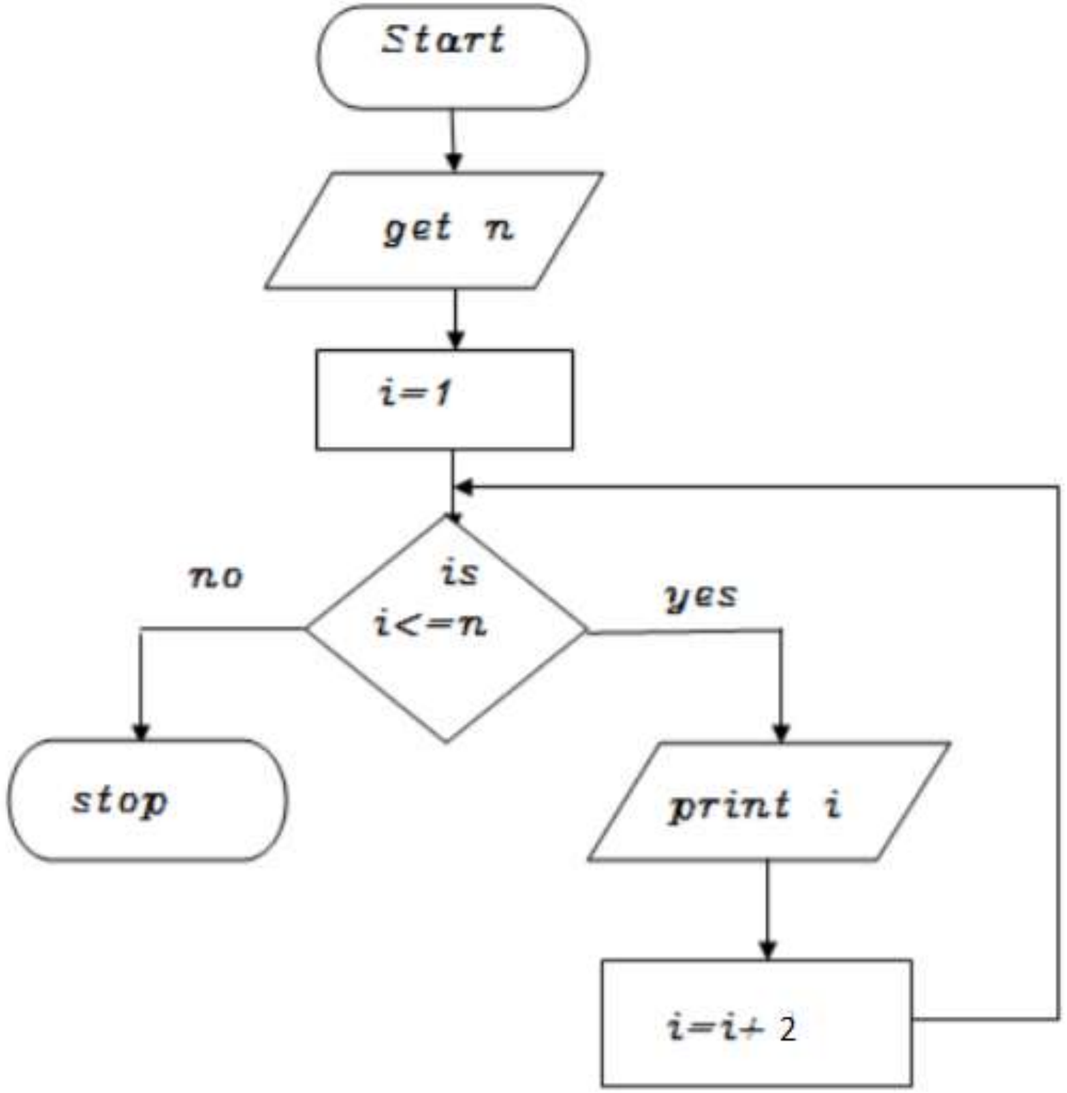


Print n odd numbers

Step 1: start
step 2: get n value
step 3: set initial value i=1
step 4: check if(i<=n) goto step 5 else goto step 8
step 5: print i value
step 6: increment i value by 2
step 7: goto step 4
step 8: stop

```
BEGIN
GET n
INITIALIZE i=1
WHILE(i<=n) DO
    PRINT i
    i=i+2
ENDWHILE
END
```

Examples



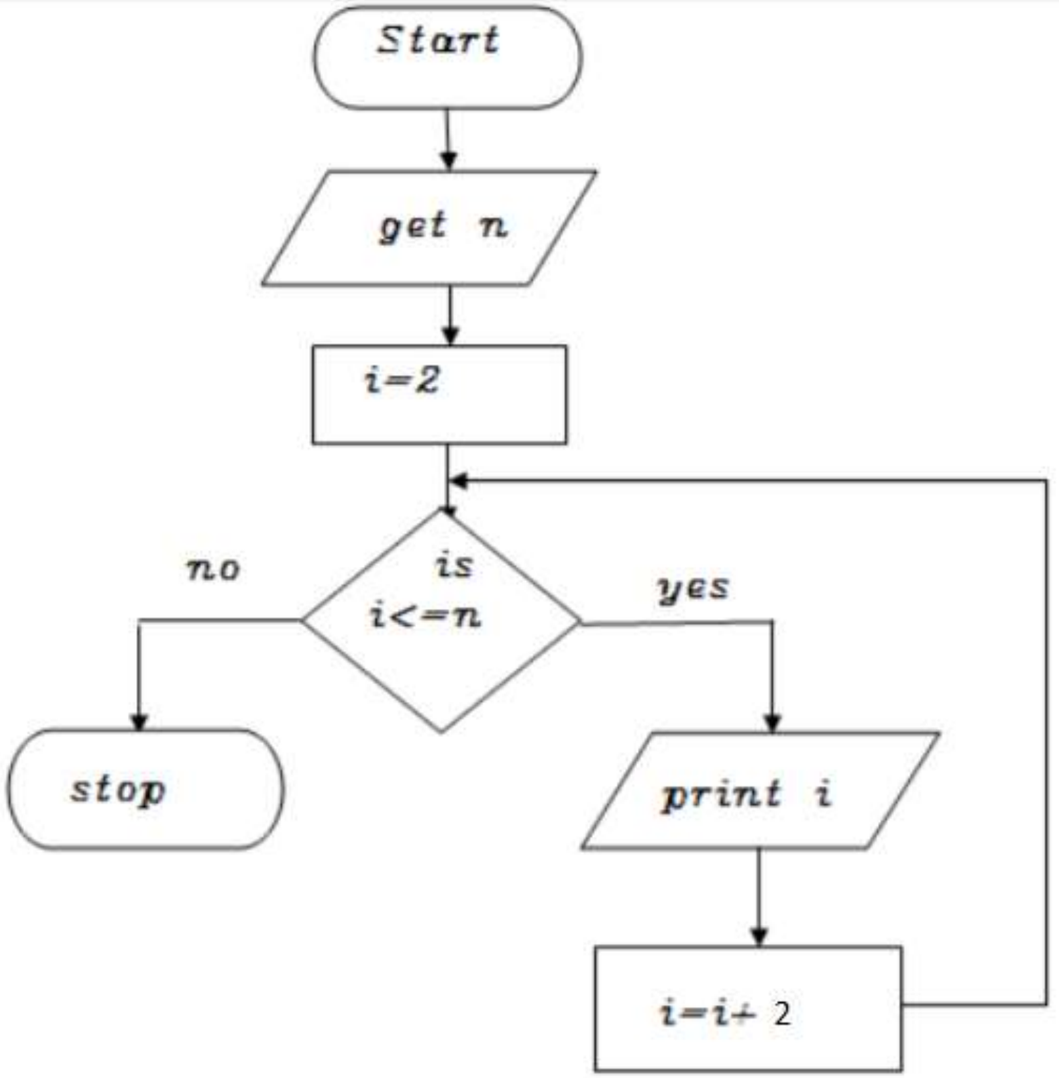
Print n even numbers

Write an algorithm to print n even numbers

Step 1: start
step 2: get n value
step 3: set initial value i=2
step 4: check if(i<=n) goto step 5 else goto step8
step 5: print i value
step 6: increment i value by 2
step 7: goto step 4
step 8: stop

```
BEGIN
GET n
INITIALIZE i=2
WHILE(i<=n) DO
    PRINT i
    i=i+2
ENDWHILE
END
```

Examples

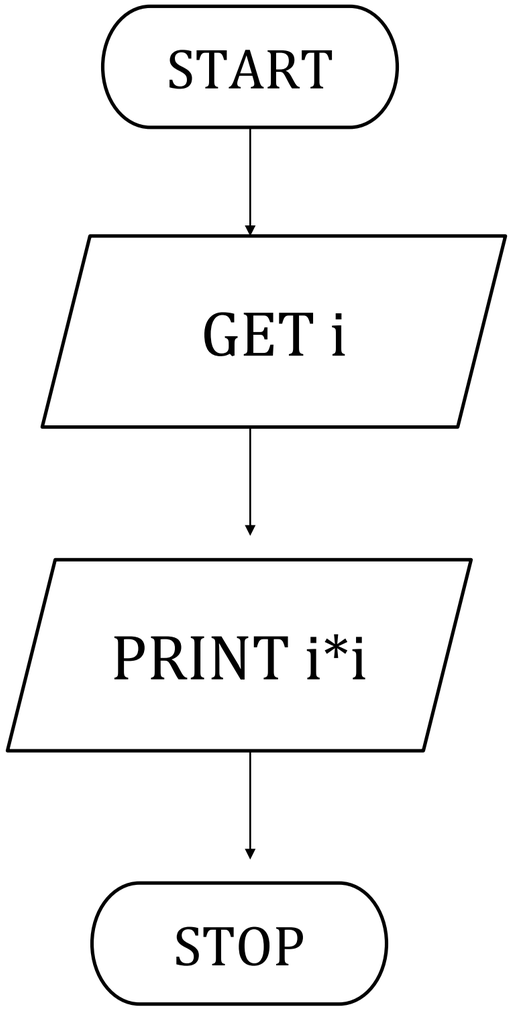


print squares of a number

Step 1: Start
Step 2: Get the value, let it be i
Step 3: print i*i
Step 4 : Stop

BEGIN
GET i
PRINT i*I
END

Conti...



Print cubes of a number

- Follow the instruction as previous example
- Just do cube operation (i*i*i)

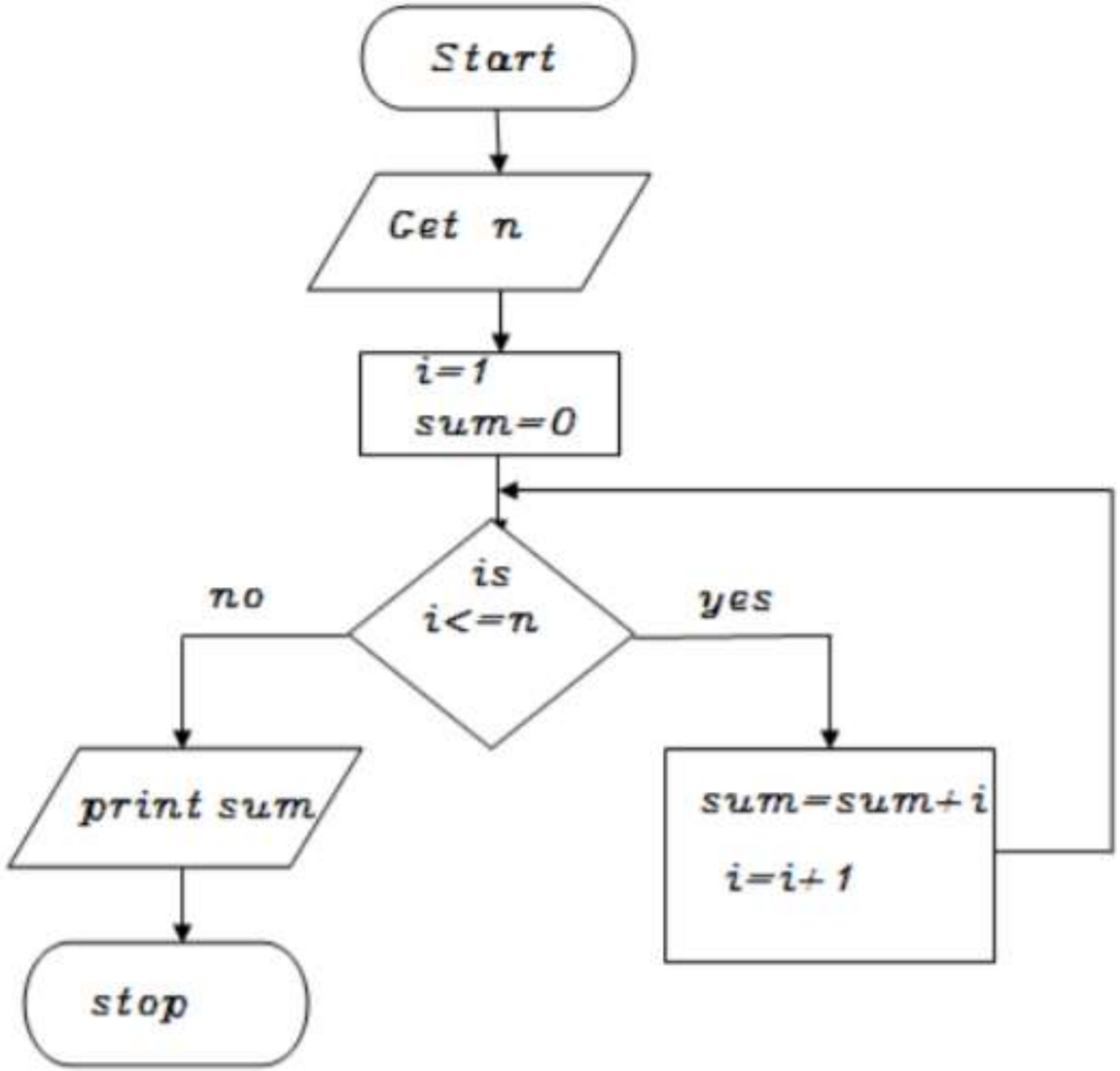
find sum of a given number

Write an algorithm to find sum of a given number

Step 1: start
step 2: get n value
step 3: set initial value i=1, sum=0
Step 4: check i value if(i<=n) goto step 5 else goto step8
step 5: calculate sum=sum+i
step 6: increment i value by 1
step 7: goto step 4
step 8: print sum value
step 9: stop

```
BEGIN
GET n
INITIALIZE i=1,sum=0
WHILE(i<=n) DO
    sum=sum+i
    i=i+1
ENDWHILE
PRINT sum
END
```

Conti...



Assessment 1

1. Write algorithm, flowchart and pseudocode for factorial of a number.

Ans : _____

References

TEXT BOOKS

1.E.Balagurusamy, “Fundamentals of Computing and Computer Programming”, 2nd Edition Tata McGRaw-Hill Publishing Company Limited, (2012). (UNIT – I, II, III, IV, V)

2.Ashok.N.Kamthane,“ Computer Programming”, Pearson Education (India) (2010). (UNIT –II, III IV, V)

3.Reema Thareja, “Programming in C”, 2nd Edition, Oxford University Press,(2015). (UNIT –I,II, III, IV, V)

REFERENCES

1.Byron Gottfried, “Programming with C”, 2nd Edition, (Indian Adapted Edition), TMH Publications, (2006). (Unit II, III, IV)

2.Stephan G kochan, “Programming in C” Pearson Education (2008), (UNIT II, III, IV, V)

3.P.Sudharson, “Computer Programming”, RBA Publications (2008), (UNIT I, II, III, IV)

4.Yashavant P. Kanetkar. “Let Us C”, BPB Publications, 2014.(Unit II, III, IV, V)

5.Anita Goel and Ajay Mittal, “Computer Fundamentals and Programming in C”, Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011. (UNIT – I, II, III, IV, V)

Thank You