S  A

U N I V E R S I T Y

**Subject**

Programming and data structures using C

**Assignment 1**

**Submitted by: Submitted to:**

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**ALGORITHMS:**

1. **Find a student average mark given mark1 and mark2.**

**Ans**. Step1: start

Step2: declare variable mark1, mark2 & avg

Step3: read values mark1, mark2

Step4: add mark1 & mark2 and divide it by 2 and assign the result to

avg

avg = (mark1 + mark2)/2

Step5: display avg

Step6: stop

1. **Calculate the total fine charged by library for late-return books. The charge is 0.20 INR for 1day.**

**Ans.** Step1: start

Step2: declare variable no.of days and fine

Step3: initialize value of charge

float charge = 0.20

Step4: read values no.of days and charge

Step5: multiply no.of days and charge and assign the result to fine

float Fine = no.of days\*0.20

Step6: display fine

Step7: stop

1. **You had bought a nice shirt which cost Rs.29.90 with 15% discount. Count the net price for the shirt.**

**Ans.** Step1: start

Step2: declare variable cost, dc and net price

Step3: initialize value of discount

float discount = 0.15

Step4: read values cost and discount

Step5: multiply cost and discount and assign the value to dc

float dc = cost\*0.15

Step6: subtract dc to cost and assign the value to net price

net price = cost-dc

Step7: display net price

Step8: stop

1. **Find the smallest number among three different numbers.**

**Ans.** Step1: start

Step2: declare variables a, b and c

Step3: read variables a, b and c

Step4: if a<b

if a<c

display a is the smallest number.

else

display c is the smallest number.

else if b<c

display b is the smallest number.

else

display c is the smallest number.

Step5: stop

1. **Find the Roots of a quadratic equation ax2+ bx + c = 0**

**Ans**. Step1: Start

Step2: declare variable a, b and c as coefficient of quadratic equation.

Step3: read variable a, b and c

Step4: create variable d and store d = b\*b-4\*a\*c

Step5: check if d is greater than 0, the root is real and different

So root1 = (-b+ d^(1/2))/2\*a

root2 = (-b- d^(1/2))/2\*a

Step6: check if d is equal to 0, the root are real and equal

So root = -b/(2\*a)

Step7: check if d is less than 0, the root are complex and

different

So real part = -b/(2\*a)

Imaginary part = -d^ (1/2)/ (2\*a)

Step8: display the value root according to the value of d

Step9: stop

1. **Find the factorial of a given number.**

**Ans.** Step1: start

Step2: declare variable a

Step3: initialize value fact=1, i=1

Step4: read value of a

Step5: until (i<=n)

Step6: fact= fact\*i

Step7: i=i+1

Step8: display fact

Step9: stop

**FLOWCHARTS:**



**Stop**

**avg =(mark1+mark2)/2**

**Display avg**

**Read mark1 and mark2**

**Declare variable mark1, mark2 and avg**

**Start**



**Display fine**

**Fine = no.of days\*0.20**

**Read no.of days and charge**

**Initialize value of charge = 0.20**

**Declare variable no.of days and fine**

**start**

**Stop**

**Stop**

**Display net price**

**net price = cost - dc**

**dc = cost\*0.15**

**Read values of cost and discount**

**Initialize value of discount = 0.15**

**Declare variable cost, dc and net price**

**Start**

**4.**

**Start**

false

false

false

true

**Stop**

**Print a**

**Print c**

**Print b**

**Is a<c**

**Is b<c**

**Is a<b**

**Read a, b and c**

**Declare variable a, b and c**



**Start**

**Declare variable a, b and c**

Create variable d and store d =b\*b-4\*a\*c

**Read variable a,b and c**

true

Display root1 and root2

Root1 = (-b+d^(1/2)/(2\*a)

Root 2 = (-b-d^(1/2)/(2\*a)

d>0

false

true

Display root

Root =-b/(2\*a)

d==0

false

true

Display real part and imaginary part

Real part= -b/(2\*a)

Imaginary part=-d^(1/2)/(2\*a)

d<0

**Stop**

false

true

**stop**

**Display fact**

**i++**

**fact=fact\*i**

**i<=a**

**Read variable a**

**Initialize value of fact=1, i=1**

**Declare variable a**

**Start**