1. Write a R program to create a data frame Student with the data of name, rollno, age, marks.

```
student=data.frame(name=c('A','B','C'),
                    rollno=c(101,102,103),
                    age=c(21,24,23),
                    marks=c(50,43,56))
```

2. Print the structure of the data frame.

```
str(student)
```

3. Print the statistical summary of the data frame

```
summary(student)
```

4. Extract the names of students

```
student[,1]
```

5. Extract first two rows from the data frame

```
student[1:2,]
```

6. Write a R program to extract 3rd and 5th rows with 1st and 3rd columns from a given data frame.

```
student[c(3,5),c(1,3)]
```

7. Add new column Address

```
student$address=c('Blore','Mlore','Mysore')
```

8. Drop column Address

```
student=select(student,-address)
```

9. Drop 2nd and 3rd rows

```
student=student[-c(2,3),]
```

10. Sort the data frame based on Name

```
arrange(student,name)
```

11. replace NA value of marks with 15

```
student <- replace(student, is.na(student), 15)
student["marks"][is.na(student["marks"])] <- 15
```

12. Count the number of NA values

```
sum(is.na(student))
```

colSums(is.na(student))

13. Change column name of marks with NewMarks

student=rename(student, Newmarks=marks)

14. Add new variable marks1 and find total marks

Student$marks1=c(67,54,78,89)

mutate(student,total=newmarks+marks1)

15. select the variables containing 'N'

select(student,contains('n'))

16. select the student with maximum marks

ms=filter(student,marks==max(marks)))

select(ms,name)

17. select the student with marks greater than 60. Print student name and marks

newdata <- subset(studdent, marks>60, select=c(name, rollno))

18. Display Student name and age whose age is between 22 and 25

newdata <- subset(student, age >= 22 & age <= 25, select=c(name,age))

19. Add 5 marks to the total marks of all students

student$total=student$total+5

20. summarise the variable marks

summarise_at(student, vars(marks),funs(mean, median, max, min))

summarise(student, mean(marks),median(marks), max(marks), min(marks)

summary(student$marks)

21. Add new column gender

student$gender=c('F','M','M)

22. Display girls with marks greater than 70

subset(student,totmarks>=70 & gender=='F')

23. Find the average marks of girls

gm=filter(student,gender=='F')

mean(gm$marks)

24. Reorder the data frame in descending order of total marks

25. plot bar chart to display the marks of each student

```
# Give the chart file a name
png(file = "marks.png")
# Plot the bar chart
barplot(student$marks,names.arg=student$name,xlab="Studentname",ylab="Marks",col="blue",
main="Marks of students", border="red")
# Save the file
dev.off()
```

Questions on Looping and conditional statements

1. Create a matrix and find the transpose of the same

2. Print Fibonacci series for the given number of terms

3. Write a R program that iterates integers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for multiples of five print "Buzz". For numbers multiples of both three and five print "FizzBuzz"

4. Write a R program to construct the following pattern, using a nested for loop

```
*
*  *
*  *  *
*  *  *  *
*  *  *  *  *
```

5. Find GCD of two numbers

6. Rahul is an obedient son. His mother wants him to go to market and purchase some vegetables based on some conditions. Rahul decided to automate the price list based on the list given by his mother:
Potato: purchase 5kg if price is <=20 otherwise purchase 1kg
Tomato: purchase 2kg if price is <=40 otherwise purchase 1kg
Onion: purchase 2kg if price is <=100 otherwise purchase 1kg

Input: First three input are prices of vegetables which Rahul asks from shopkeeper
Output: Quantity of each vegetable

7. Write a program using user defined function to check whether a given number is prime or not

```
{

isprime=function(n)

{ count=0

  for(i in 1:n)

  {

    if(n%%i==0)

    {

      count=count+1

    }

  }

if(count==2)

{

  print(paste(n,"is prime"))

} else

{

  print(paste(n,"is not prime"))

}

}

n=as.integer(readline(prompt="enter a number"))

isprime(n)

}
```

8. Find area of a circle using user defined function

```
{
area=function(r)
{
  return (pi*r*r)
}
r=as.integer(readline(prompt="enter radius"))
```

```r
print(paste("area of circle=",area(r)))
}
```

9. perform arithmetic operations using switch statement

```r
res=switch(ch,
        '1'= paste("sum=", a+b),
        '2'= paste("diff=", a-b),
        '3'= paste("prod=", a*b),
        '4'= paste("quo=", a/b),
        '5'= paste("mod=", a%%b))
print(res)
}

{
  a=as.integer(readline(prompt="enter first number"))
  b=as.integer(readline(prompt="enter second number"))
  res=switch(3,
        paste("sum=", a+b),
        paste("diff=", a-b),
        paste("prod=", a*b),
        paste("quo=", a/b),
        paste("mod=", a%%b))
  print(res)
}
```

10. count number of times each word occurs in a string

```r
library(stringr)
s="A B C A B"
l=strsplit(s,split=" ")
print(l)
for (i in l)
{
print(paste("the string",i,"occurs",str_count(s,i)))
}
```