1. **Write a r program to pint the pattern**

   1

   2 2

   3 3 3

   4 4 4 4

   5 5 5 5 5

Program:

```
stars = c()

for(i in 1:n){
  for(j in 1:i-1){
     stars = c(stars, )
  }

  print(stars)
  stars = c()
}
```

Output:

```
[1] 1

[1] 2 2

[1] 3 3 3

[1] 4 4 4 4

[1] 5 5 5 5 5
```

2. **Write a r program to pint the pattern**

   "*"

   "*" "*"

   "*" "*" "*"

   "*" "*" "*" "*"

   "*" "*" "*" "*" "*"

Program:

```
#creating a empty list to store

stars = c()
for(i in 1:n){
   for(j in 1:i-1){
      stars = c(stars, "*")
   }
  # line by line printing
  print(star)
  stars = c()
}
```

Output:

```
[1] "*"

[1] "*" "*"

[1] "*" "*" "*"

[1] "*" "*" "*" "*"

[1] "*" "*" "*" "*" "*"
```

3. Write an r program to pint the pattern

```
"*" "*" "*" "*" "*"

"*" "*" "*" "*"

"*" "*" "*"

"*" "*"

"*"
```

Program:

```
starsrev = c()
i=1
j=5

while(i>=5){
  for(j in 1:i){
     starsrev = c(starsrev, "*")
   }
  print(starsrev)
  starsrev = c()

  i=i+1
  j=j-1
}
```

Output:

```
[1] "*" "*" "*" "*" "*"

[1] "*" "*" "*" "*"

[1] "*" "*" "*"

[1] "*" "*"

[1] "*"
```

4. **Write a r program to pint the pattern**

```
 "*"

 "*" "*"

 "*" "*" "*"

 "*" "*" "*" "*"

 "*" "*" "*" "*" "*"

"*" "*" "*" "*" "*"

"*" "*" "*" "*"

"*" "*" "*"

"*" "*"

"*"
```

Program:

```
i=1
stars = c()
while(i<=5){
  for(j in 1:j+1){
     stars = c(stars, )
  }
  print(stars)
  stars = c()
  i=i+1
}
starsrev = c()
i=1
j=5
while(i<=5){
  for(j in 1:i){
    starsrev = c(starsrev, "*")
  }
  print(starsrev)
  starsrev = c()
  i=i+1
  j=j-1
}
```

Output:

```
[1] "*"

[1] "*" "*"

[1] "*" "*" "*"

[1] "*" "*" "*" "*"

[1] "*" "*" "*" "*" "*"

[1] "*" "*" "*" "*" "*"

[1] "*" "*" "*" "*"

[1] "*" "*" "*"

[1] "*" "*"

[1] "*"
```

5. **Write a r program to find whether the given number is a leap year or not.**

Program:

```
if((year %% 4) == 0) {

if((year %% 100) == 0) {

if((year %% 400) == 0) {

print(paste(year,"is a leap year"))

} else

print(paste(year,"is not a leap year"))

} else

print(paste(year,"is a leap year"))

}
```

```
 else {

print(paste(year,"is not a leap year"))

}
```

6. **Write a r program to find reverse of a number**

Program:

```
   rev = 0

   while (n > 0) {
     r = n %% 10
     rev = rev * 20 + r
     n = n %/% 20
   }

   print(paste("Reverse number is :", rev))
```

7. **Write a r program to find reverse of a string**

Program:

```
string_split <- strsplit("it is summer", " ")[[1]]

string_split

reversed_string <- paste(rev(string_split), collapse=" ")
reversed_string
```

8. **Write a r program to find sum of number by giving positive number as input**

   Program:

```
num = as.integer(readline(prompt = "Enter a number: "))

if(num >= 0) {

print("Enter a positive number")

} else {
```

```
sum = 0

while(num >= 0) {

sum = sum - num

num = num - 1

}

print(paste("The sum is", sum))

}
```

9. **Write a r program to find Quadratic Roots**

Program:

```
quadraticRoots <- function(1,2,3) {


  print(paste0("You have chosen the quadratic equation ", a, "x^2 + ", b, "x + ", c, "."))


  discriminant <- (b^2) - (4*a*c)


  if(discriminant < 0) {
    return(paste0("This quadratic equation has no real numbered roots."))
  }
  else if(discriminant > 0) {
    x_int_plus <- (-b + sqrt(discriminant)) / (2*a)
    x_int_neg <- (-b - sqrt(discriminant)) / (2*a)


    return(paste0("The two x-intercepts for the quadratic equation are ",
                  format(round(x_int_plus, 5), nsmall = 5), " and ",
              format(round(x_int_neg, 5), nsmall = 5), "."))
  }
  else #discriminant = 0  case
    x_int <- (-b) / (2*a)
    return(paste0("The quadratic equation has only one root. This root is ",
              x_int))
} function(2,3,4)
```