

ASSIGNMENT 01

Date:

Problem 01: Miles per hour to kilometer per seconds.

CODE

```

DECLARE SPEED, CONVERT : INTEGER
PRINT " ENTER SPEED IN KM/S"
INPUT SPEED
CONVERT = SPEED * (2236.9)
PRINT " THE SPEED IN MILES /PER HOUR IS ", CONVERT.

```

IPO

INPUT	PROCESSING	MODULE	OUTPUT
SPEED IN KM/S	READ SPEED CALCULATE (SPEED X 2236)	READ CALCULATE	CONVERTED SPEED
	OUTPUT CONVERTED SPEED	PRINT	

Problem 02: Even or odd.

CODE

```

DECLARE NUM, MOD : INTEGER.
PRINT " ENTER THE NUMBER"
INPUT NUM
IF (NUM <= 0) THEN
    PRINT " INVALID NUMBER"
ELSE
    MOD = NUM / 2
    IF MOD == 0 THEN
        PRINT " NUM IS EVEN"
    ELSE PRINT " NUM IS ODD"
    END IF
END IF

```

ASSIGNMENT 01

Date:

IPO	INPUT	PROCESSING	MODULE	OUTPUT
	NUM	READ NUM ≥ 0	READ	STATUS
		CALCULATE MOD [NUM/2]	CALCULATE	
		MOD == 0	READ	
		OUTPUT "NUM IS EVEN"	PRINT	
		MOD != 0	READ	
		OUTPUT "NUM IS ODD"	PRINT	

Problem 03: Legal age of marriage in Pakistan.

CODE	DECLARE PROVINCE, GENDER : STRING DECLARE AGE : INTEGER PRINT "ENTER THE PROVINCE YOU RESIDE" INPUT PROVINCE PRINT "ENTER YOUR GENDER" INPUT GENDER PRINT "ENTER YOUR AGE" IF (PROVINCE = "SINDH" AND GENDER = "BOY" AND AGE ≥ 18) THEN PRINT "YOU CAN MARRY" ELSE IF (PROVINCE = "SINDH" AND GENDER = "GIRL" AND AGE ≥ 18) THEN PRINT "YOU CAN MARRY" ELSE IF (PROVINCE = "PUNJAB" AND GENDER = "BOY" AND AGE ≥ 18) THEN PRINT "YOU CAN MARRY"
------	---

ASSIGNMENT 01

Date: _____

Continued

```

ELSE IF (PROVINCE = "PUNJAB" AND GENDER = "GIRL" AND AGE >= 16) THEN
    PRINT " YOU CAN MARRY"
ELSE
    PRINT " YOU ARE UNABLE TO MARRY"

```

IPO

INPUT	PROCESSING	MODULE	OUTPUT
PROVINCE	READ PROVINCE, AGE,	READ	CONCLUSION
GENDER	GENDER		
AGE	CALCULATE IF		
	PUNJAB, BOY, 18	CALCULATE	
	PUNJAB, GIRL, 16	CALCULATE	
	SINDH, BOY, 18	CALCULATE	
	SINDH, GIRL, 18	CALCULATE	
	OUTPUT "LEGAL TO MARRY"	PRINT	

Problem 4: Grocery Assistance / calculator.

CODE

```

DECLARE MONEY, ONIONS, TOMATOES, GRAPES, TOTAL, REMAINING : INTEGER
PRINT " PLEASE ENTER THE TOTAL AMOUNT YOU HAVE"
INPUT MONEY
PRINT " HOW MANY TOMATOES"
INPUT TOMATOES
PRINT " HOW MANY ONIONS"
INPUT ONIONS
PRINT " HOW MANY GRAPES"
INPUT GRAPES.

```

ASSIGNMENT 01

Date: _____

Continued...

```
TOTAL = (TOMATOES * 0.50) + (GRAPES * 2) + (ONIONS * 1)
```

```
PRINT "YOU HAVE TO PAY THE TOTAL AMOUNT", TOTAL
```

```
REMAINING = MONEY - TOTAL
```

```
PRINT "AND THE REMAINING AMOUNT IS", REMAINING.
```

```
END
```

IPO	INPUT	PROCESSING	MODULE	OUTPUT
	MONEY	READ MONEY, TOMATOES,	READ	TOTAL
	TOMATOES	ONION, GRAPES	READ	REMAINING
	ONIONS	CALCULATE TOMATOES(0.5)	CALCULATE	
	GRAPES	+ ONIONS(1) + GRAPES(2) = TOTAL		
		CALCULATE MONEY - TOTAL = REMAINING	CALCULATE	
		PRINT TOTAL, REMAINING	PRINT	

Problem 05: Crop Management

CODE

```
DECLARE MOISTURE, CROP : STRING
```

```
DECLARE RAIN, IRRIGATION-SYSTEM : BOOLEAN
```

```
PRINT "SOIL MOISTURE FROM DRONE"
```

```
INPUT MOISTURE
```

```
PRINT "INPUT THE TYPE OF CROP"
```

```
INPUT CROP
```

```
PRINT "DID IT RAIN IN LAST 24 HOURS"
```

```
INPUT RAIN.
```

ASSIGNMENT 01

Date:

```

IF ( CROP = "WHEAT" AND MOISTURE < 30 AND RAIN = FALSE ) THEN
    IRRIGATION_SYSTEM = TRUE
ELSE IF ( CROP = "CORN" AND MOISTURE < 40 ) THEN
    IRRIGATION_SYSTEM = TRUE
ELSE IF ( CROP = "RICE" AND MOISTURE < 25 AND RAIN = FALSE ) THEN
    IRRIGATION_SYSTEM = TRUE
ELSE
    PRINT "CROP DOESN'T REQUIRE IRRIGATION"
END

```

IPO	INPUT	PROCESSING	MODULE	OUTPUT
	CROP	READ CROP, MOISTURE	READ	IRRIGATION.
	MOISTURE	RAIN		SYSTEM
	RAIN	CALCULATE CROP (WHEAT, RICE, CORN)	CALCULATE	
		CALCULATE MOISTURE (<30, <25, <40)	CALCULATE	
		CALCULATE RAIN	CALCULATE	
		PRINT IRRIGATION = SYSTEM	PRINT	

ASSIGNMENT 04

Date:

PROBLEM 068 Amusement Park Ride Eligibility.

COPE

```

DECLARE AGE, HEIGHT : INTEGER ; DECLARE RIDE : STRING
PRINT " PLEASE ENTER YOUR HEIGHT "
INPUT HEIGHT
PRINT " PLEASE ENTER YOUR AGE "
INPUT AGE
PRINT " PLEASE ENTER THE RIDE NAME "
INPUT RIDE
IF (RIDE = "DRAGON ROLLERCOASTER" AND AGE >= 10 AND HEIGHT >= 48)
    THEN PRINT " YOU MEET CRITERIA FOR ROLLER COASTER "
ELSE IF (RIDE = "SKY SWING" AND HEIGHT >= 54) THEN
    PRINT " YOU MEET CRITERIA FOR SKY SWING "
ELSE IF (RIDE = "CAROUSEL" AND AGE >= 5) THEN
    PRINT " YOU MEET CRITERIA FOR CAROUSEL "
ELSE
    PRINT " YOU DONT MEET THE CRITERIA "

```

IPO

INPUT	PROCESSING	MODULE	OUTPUT
AGE	READ HEIGHT	READ	ELIGIBILITY
HEIGHT	READ RIDE	READ	
RIDE	READ AGE	READ	
	PROCESS HEIGHT >= 48, AGE >= 10	PROCESS	
	OUTPUT " DRAGON ROLLER COASTER "	PRINT	
	PROCESS HEIGHT = 54	PROCESS	
	OUTPUT " SKY SWING "	PRINT	

ASSIGNMENT 01

Date: _____

Problem 07: Which floor....

CODE

```
DECLARE FLOOR : INTEGER  
PRINT " ENTER 7-DIGIT LONG INPUT"  
INPUT FLOOR  
  
IF (FLOOR = 1111110) THEN  
    PRINT 0  
  
ELSE IF (FLOOR = 0110000) THEN  
    PRINT 1  
  
ELSE IF (FLOOR = 1101101) THEN  
    PRINT 2  
  
ELSE IF (FLOOR = 1111001) THEN  
    PRINT 3  
  
ELSE IF (FLOOR = 0110011) THEN  
    PRINT 4  
  
ELSE IF (FLOOR = 1011011) THEN  
    PRINT 5  
  
ELSE IF (FLOOR = 1011111) THEN  
    PRINT 6  
  
ELSE IF (FLOOR = 1110000) THEN  
    PRINT 7  
  
ELSE IF (FLOOR = 1111111) THEN  
    PRINT 8  
  
ELSE IF (FLOOR = 1111011) THEN  
    PRINT 9  
  
END
```

ASSIGNMENT 01

Date:

FPO	INPUT	PROCESSING	MODULE	OUTPUT
	FLOOR	READ FLOOR	READ	0
		PROCESS FLOOR	CALCULATE	1
		111110, 0110000, 0110011,		2
		1011011, 1011111, 1110000,		3
		111111, 1111011		4
		PROCESS [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]	CALCULATE	5
		PRINT	OUTPUT	6
				7
				8
				9

Problem 08: Digit Sum

CODE

```

DECLARE NUM, DIGIT : INTEGER
FUNCTION SUMDIGIT( NUM ) : INTEGER
    N = NUM / 10 + SUMDIGIT( NUM / 10 )
    RETURN N
PRINT "ENTER A NUMBER"
INPUT DIGIT
SUMDIGIT( DIGIT ) = ANSWER
PRINT ANSWER
END

```

ASSIGNMENT 01

Date:

TPO	INPUT	PROCESSING	MODULE	OUTPUT
	NUM	READ NUM	READ	ANSWER.
	DIGIT	CALCULATE SUMDIGIT (NUM)	PROCESS	
		READ DIGIT	READ	
		PRINT . ANSWER	OUTPUT	

Problem 09: Exact age in days, months and years from DOB.

```

CODE
DECLARE DOB-DAY, DOB-YEAR, DOB-MONTH, CURRENT-DAY, CURRENT-MONTH, CURRENT-YEAR : INTEGERS

FUNCTION CALCULATE-AGE (DOB-DAY, DOB-MONTH, DOB-YEAR, CURRENT-DAY,
CURRENT-MONTH, CURRENT-YEAR)
    YEARS = CURRENT-YEAR - DOB-YEAR
    IF CURRENT-MONTH < DOB-MONTH THEN
        MONTHS = (12 - DOB-MONTH + CURRENT-MONTH) MOD 12
    ELSE
        MONTHS = CURRENT-MONTH - DOB-MONTH
    IF CURRENT-DAY < DOB-DAY
        DAYS = (DAY-IN-NORTH (DOB-MONTH, DOB-YEAR)) - DOB-DAY + CURRENT-DAY
    ELSE
        DAYS = CURRENT-DAYS - DOB-DAYS
    TOTAL-DAYS = YEARS * 365 + MONTHS * 30 + DAYS
    RETURN YEARS, MONTHS, DAYS, TOTAL-DAYS.

```

ASSIGNMENT 01

Date: _____

```
PRINT " PLEASE ENTER DOB DATE , MONTH AND YEAR "
INPUT DOB-DATE
INPUT DOB-MONTH
INPUT DOB-YEAR
PRINT " PLEASE ENTER CURRENT DATE , MONTH AND YEAR "
INPUT CURRENT-DATE
INPUT CURRENT-MONTH
INPUT CURRENT-YEAR .
PRINT " YOU ARE ", YEARS, " YEARS , MONTHS , DAYS , " DAYS OLD ".
END.
```

Problem 10 : Poor Mr. Bhoola bought a faulty keyboard.

CODE

```
DECLARE INDEX , LEN , NUM $ INTEGER
```

```
PRINT " PLEASE ENTER YOUR NUMBER "
```

```
INPUT NUM
```

```
LEN = LENGTH (NUM)
```

```
FOR INDEX 1 TO LEN
```

```
    X = MID (LEN , INDEX , 2)
```

```
    IF (X = 90) THEN
```

```
        X = 9
```

```
    ELSE
```

```
    NEXT
```

```
PRINT NUM
```

ASSIGNMENT 01

Date: _____

IPO	INPUT	PROCESSING	MODULE	OUTPUT
	NUM	READ NUM	READ	NUM
		READ LEN	READ	
		CALCULATE LEN	CALCULATE	
		X = MID (LEN, INDEX, 2)		
		PRINT NUM	OUTPUT	

Problem 11: No not optimus prime its coprime...

CODE

```
INPUT NUM1, NUM2
```

```
DIVISOR = 2
```

```
FLAG = TRUE
```

```
WHILE (DIVISOR <= NUM1) AND (DIVISOR <= NUM2) AND (FLAG == TRUE)
```

```
IF (NUM1 % DIVISOR) AND (NUM2 % DIVISOR = 0) THEN
```

```
FLAG = FALSE
```

```
END IF
```

```
DIVISOR = 1
```

```
END WHILE
```

```
IF FLAG = TRUE THEN
```

```
PRINT "NUMBERS ARE COPRIME"
```

```
ELSE
```

```
PRINT "NUMBERS ARE NOT COPRIME"
```

```
ENDIF
```

```
END
```

ASSIGNMENT 01

Date:

IPO	INPUT	PROCESSING	MODULE	OUTPUT
	NUM1	READ NUM1, NUM2	READ	STATUS
	NUM2	CALCULATE (DIVISOR <= NUM1) (DIVISOR <= NUM2) (FLAG = TRUE)	CALCULATE	
		CALCULATE (NUM % DIVISOR) (NUM2 % DIVISOR) = 0 FLAG FALSE	CALCULATE	
		PRINT "Divisor of both numbers is"	OUTPUT	Output

Problem 12 : Die Hard 3 : Defuse the bomb... Quick.

CODE	DECLARE 3LJUG, 5LJUG, WATER
	3LJUG = 1 (Fill 3L Jug)
	5LJUG = 3LJUG (Transfer water to 5L Jug from 3L Jug)
	3LJUG = 1
	5LJUG += 3LJUG (Add water of 3L Jug to 5L Jug until its full)
	5LJUG = 0 (Empty the jug)
	5LJUG = 3LJUG (Transfer remaining water of 3L Jug to 5L Jug)
	5LJUG = 3LJUG
	OUTPUT 5LJUG
	END

Problem 13: The general N-M size die hard jug problem.

DECLARE JUGM, JUGN, GCD, AMOUNTL, TEMP1, TEMP2

INPUT JUGM, JUGN, AMOUNTL

GCD = JUGM

TEMP1 = JUGN

WHILE TEMP1 ≠ 0

TEMP2 = TEMP1

TEMP1 = GCD % TEMP1

GCD = TEMP2

IF AMOUNTL > JUGN

IF AMOUNTL % GCD == 0

PRINT "SOLUTION IS POSSIBLE"

ELSE

PRINT "SOLUTION IS NOT POSSIBLE"

ELSE

IF GCD % AMOUNTL == 0

PRINT "SOLUTION IS POSSIBLE"

ELSE

PRINT "SOLUTION IS NOT POSSIBLE".