

# 2022 PRELIMINARY EXAMINATION Secondary 4 Express Computing Paper 2

## **ANSWERS AND MARKING SCHEME**

Question	Answer	Marks
1	=TODAY()	1
2	=YEAR(\$B\$1) – RIGHT(C3,4) in cell D3	1
	Accept MID function: =YEAR(\$B\$1) – MID(C3,6,4).	
	Use of YEAR() function and absolute cell referencing to copy formula to	1
	rest of Number of Years Joined	
3	=VLOOKUP(D3,\$A\$17:\$C\$20,3,TRUE)*F3	1
	One mark for working top formula, one mark for the rest	1
	= VLOOKUP(D4,\$A\$17:\$C\$20, 3, TRUE)*F4 = VLOOKUP(D5,\$A\$17:\$C\$20, 3, TRUE)*F5  VLOOKUP(D14,\$A\$17:\$C\$20, 3, TRUE)*E14	
4	=F3-G3	1
	=F4-G4	-
	=F14-G14	
5	One mark for working top formula, one mark for the rest	2
	=IF(AND(D3>=3,E3="Yes"),"Yes","No") =IF(AND(D4>=3,E4="Yes"),"Yes","No")  =IF(AND(D14>=3,E14="Yes"),"Yes","No")	
6	Conditional Formatting applied to range with correct formula and colour	2
	Conditional Formatting Rules Manager ? X	
	Show formatting rules for:	
	OK Close Apply	

Question	Answer	Marks
	Program edited:	
		_
7	<pre>member_no = int(input("Number of people: "))</pre>	1
	minimum age = 14	
	<pre>for i in range(member_no):</pre>	
	<pre>name = input("Name of person: ") and = input("Name of person: ")</pre>	
	age = int(input("Age of person: "))	
	## if age >= minimum age:	
	## print("Person is old enough.")	
	## else:	
	## print("Person is not old enough.")	
8	healthcheck = input("Any medical condition? (Y/N) ")	
	if healthcheck == "Y" or healthcheck == "y":	1
	fit = False	4
	else:	1
	IIT = True if age $\geq$ minimum age and fit == False.	1
	print("The person is not fit enough.")	I
	elif age < minimum age and fit == True:	1
	print("The person is not old enough.")	•
	<pre>elif age &lt; minimum_age and fit == False:</pre>	1
	print("The person is not fit enough and not old enough.")	
	print("The person is old enough and fit enough.")	
	rember no - int (innut ("Number of peoples"))	
9	member_no - int(input( Number of people: ))	
	minimum_age = 14	
		1
	fit_list = []  #initialise list	
	for i in range(member no).	
	name = input("Name of person: ")	
	<pre>age = int(input("Age of person: "))</pre>	
	<pre>nealthcheck = input("Any nealth issues? (Y/N) ") if healthcheck == "Y" or healthcheck == "y".</pre>	
	fit = False	
	else:	
	fit = True	
	if age >= minimum_age and fit == False:	
	print("The person is not fit enough.")	
	print("The person is not old enough.")	
	elif age < minimum_age and fit == False:	
	print("The person is not fit enough and not old enough.")	
	else:	
	<pre>princ( ine person is ord enough and fit enough.") fit list = fit list + [name] #append to list</pre>	2
	TTO_TTOO TTO_TTOO (name) "appond to TTOO	
	for person in fit_list:	4
	print(person) #output list of fit and old enough	Ĩ

Question	Answer	Marks
10	# Task 3 solution # Variable declarations count = 0	1
	<pre>year = int(input("Enter a year: "))</pre>	1
	if year % 400 <u>==</u> 0: isLeapYear = True	1
	<pre>elif year % 100 == 0: isLeapYear = False elif waar % 4 == 0:</pre>	1
	elli year <u>*</u> 4 == 0: isLeapYear = True else:	1
	isLeapYear = False	
	if isLeapYear: print(year, " <u>is a leap year.")</u> else:	1
	print(year, " <u>is not a leap year</u> .") #syntax & logic } <u>count = count + 1</u>	1 1
	indentation	1

Question	Answer	Marks
11	Program: input eight_bits (as string)	2
	Variable set up for parity_bit	1
	Use of loop to keep checking for input until blank line is entered	2
	Use of user-defined function for computing even parity bit and returning value Definition Argument Return value	3
	Correct calculation for counting number of ones and zeroes	2
	Clear and correct output of parity bit (whether 0 or 1)	1
	Display appropriate error message when user enters something other than 8 bits	1

Question	Answer	Marks
12	Test: three lines of output (3) $(-1$ for each line with an error)	3
	Test 1: 01010011	
	Parity bit is O	
	Test 2: 1100000	
	Please enter 8 bits. Try again.	
	Followed by: 11000001	
	Parity bit is 1	

Question	Answer	Marks
13	Extend: allows user to choose even or odd parity	1
	Extend: correct user defined function for computing parity bit using odd parity	2
	Correct output (-1 for each line with an error)	2

#### **Task 4 Sample solution**

```
Question 11
#compute even parity for sets of 8 bits entered by user.
#even parity udf
def even parity(number):
   ones = number.count("1")
   if ones % 2 == 0:
        return 0
    else:
       return 1
#read first line of input
line = input("Enter 8 bits: ")
#continue looping until a blank line is entered
while line != "":
    #ensure that the line has a total of 8 zeros and 1's and exactly 8
characters
    if line.count("0") + line.count("1") != 8 or len(line) != 8:
        #display an appropriate error message
        print ("Please enter 8 bits. Try again.")
    else:
        #call user-defined function
        parity = even parity(line)
        print("The parity bit should be", parity)
    line = input("Enter 8 bits: ")
```

#### **Question 12 screenshot**

```
Python 3.5.2 Shell - C ×
File Edit Shell Debug Options Window Help
Python 3.5.2 (v3.5.2:4def2a2901a5, Jun 25 2016, 22:18:55) [MSC v.1900 64 bit (AM ▲
D64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
RESTART: C:\Users\linda.chin\OneDrive - Pathlight School\Documents\Prelim 2022\
Answers\EVENPARITY_solution.py
Enter 8 bits: 01010011
The parity bit should be 0
Enter 8 bits: 1100000
Please enter 8 bits. Try again.
Enter 8 bits: 1100001
The parity bit should be 1
Enter 8 bits: 1100001
```

### **Question 13**

```
def odd_parity(number):
    ones = number.count("1")
    if ones % 2 == 1:
        return 0
    else:
        return 1
```

THE END