Pascal - programming exercises

Use the following naming convention for Pascal programs and files: **Ex*N*** (replace *N* with the exercise number - no spaces). Save the programs in the MY_WORK folder on your pen drive.

1. Write a program that clears the screen and displays the following text:

Hello World!

---

2. Identify the most appropriate data type for a variable used for the following data. The data types are: INTEGER, REAL, CHAR, STRING, BOOLEAN

variable used to store …	**data type**	**variable used to store …**	**data type**
a person's name		a vehicle's license plate number (e.g: PAS001)	
test marks (60, 74, 98, etc)		a telephone number	
test grades (A, B, C, F)		a door number	
whether a student passed a test		the product of two integers	
a person's year of birth		the quotient of two integers (x / y)	
a person's age		the area of a circle	
the sum of all even numbers from 1 to 100		a VAT rate	
the sum of 2, 5, 3.2 and 7		the *joining together** of a string and a character	

* *concatenation* E.g.: 'snow' + 'ball' = 'snowball'

3.
- Declare variables of the appropriate type for the following data.

Data	**Variable name**	**Data type**
10%		
€12.33		
Mary		
c		

- Assign the data to the variables
- Display the contents of the variables on the screen

4. Change the program in exercise 3 such that, for each variable, the following is displayed:

Example: **Variable contains** *variable content*

5.
- Declare a STRING variable called MyName
- Set MyName to your name
- Display 'Hello *your_name*' at the centre of the screen

6.
- Declare two STRING variables: Name and Surname
- Declare an INTEGER variable: Age
- Assign to Name and Surname your name and surname
- Assign your age to Age
- Display the following:

Hello – my name is *name surname.*
blank line
I am *age* **years old.**

7. How many columns and rows are there in the output screen?

columns: _____ rows: _____

8. Modify the program in exercise 5 so that the text is displayed at the centre of the screen inside a box, thus:

Hello, my name is *name surname.*
blank line
I am *age* **years old.**

Note: to type box component characters, keep the **Left ALT** tab pressed and type in the character's ASCII code on the **numeric keypad**.

9. Write a program that:

- Prompts the user to enter her name
- Clears the screen
- Displays 'Hello *name*' at the centre of the screen

10. Write a program that:

- Prompts the user to enter two words
- Clears the screen
- Displays the concatenation of the words

E.g.: if the user enters 'Table and 'soccer', the program displays 'tablesoccer'

11. Write a program, similar to that in exercise 10, but modify it such that a dash ('-') is inserted between the words.

E.g.: if the user enters 'thirty and 'five, the program displays 'thirty-five'

12. Write a program that:

    - Prompts the user to enter two integer numbers (A and B)
    - Displays the sum of the two numbers (A + B)
    - Displays the product of the two numbers (A * B)
    - Displays the quotient of the numbers (A / B)

13. Write a program that prompts the user to enter the length of the sides of a rectangle, and outputs the area and the perimeter of the rectangle.

14. Write a program that prompts the user to enter the length of the side of a cube and outputs the volume of the cube.

15. Write a program that prompts the user to enter the radius of a circle (integer) and outputs the circumference and the area. Both amounts should be displayed to two decimal places.

    Note: circumference = 2 * pi * radius pi = 3.142
    area = pi * radius^2

16. Write a program that prompts the user to enter the length of the base and height of a triangle and outputs the area of the triangle to two decimal places. (Area = 0.5 * BASE * HEIGHT)

17. Write a program that prompts the user to enter FOUR numbers and outputs their average to two decimal places.

18. Write a program that prompts the user to enter two integers A and B, divides A by B, and outputs the quotient and the remainder. For example, if the user enters A = 7 and B = 2, the program outputs:

    Quotient is 3
    Remainder is 1

19. Write a program that prompts the user to enter her year of birth and outputs her age.

20. Write a program that prompts the user to enter the price of FOUR items. The program then calculates and outputs 1) the total, 2) the VAT at 18% chargeable on the total and 3) the final amount inclusive of VAT. Example:

```
Please input price of item 1: 20
Please input price of item 2: 15.30
Please input price of item 3: 10
Please input price of item 4: 20.20
-------------------------------------------
Total:  65.50
VAT:  11.79
Final amount: 77.29
```

    Note: you should declare the VAT rate as a constant (const vat_rate: real = 0.18);

ASCII Table

000	(nul)	016 ►	(dle)	032	sp	048	0	064	@	080	P	096	`	112	p
001 ☺	(soh)	017 ◄	(dc1)	033	!	049	1	065	A	081	Q	097	a	113	q
002 ☻	(stx)	018 ↕	(dc2)	034	"	050	2	066	B	082	R	098	b	114	r
003 ♥	(etx)	019 ‼	(dc3)	035	#	051	3	067	C	083	S	099	c	115	s
004 ♦	(eot)	020 ¶	(dc4)	036	$	052	4	068	D	084	T	100	d	116	t
005 ♣	(enq)	021 §	(nak)	037	%	053	5	069	E	085	U	101	e	117	u
006 ♠	(ack)	022 ▬	(syn)	038	&	054	6	070	F	086	V	102	f	118	v
007 •	(bel)	023 ↨	(etb)	039	'	055	7	071	G	087	W	103	g	119	w
008 ◘	(bs)	024 ↑	(can)	040	(	056	8	072	H	088	X	104	h	120	x
009	(tab)	025 ↓	(em)	041	)	057	9	073	I	089	Y	105	i	121	y
010	(lf)	026	(eof)	042	*	058	:	074	J	090	Z	106	j	122	z
011 ♂	(vt)	027 ←	(esc)	043	+	059	;	075	K	091	[	107	k	123	{
012 ♀	(np)	028 ∟	(fs)	044	,	060	<	076	L	092	\	108	l	124	|
013	(cr)	029 ↔	(gs)	045	-	061	=	077	M	093	]	109	m	125	}
014 ♫	(so)	030 ▲	(rs)	046	.	062	>	078	N	094	^	110	n	126	~
015 ☼	(si)	031 ▼	(us)	047	/	063	?	079	O	095	_	111	o	127	⌂

Extended ASCII table

128	Ç	143	Å	158	₧	172	¼	186	‖	200	╚	214	╓	228	Σ	242	≥
129	ü	144	É	159	ƒ	173	¡	187	╗	201	╔	215	╫	229	σ	243	≤
130	é	145	æ	160	á	174	«	188	╝	202	╩	216	╪	230	µ	244	⌠
131	â	146	Æ	161	í	175	»	189	╜	203	╦	217	┘	231	τ	245	⌡
132	ä	147	ô	162	ó	176	░	190	╛	204	╠	218	┌	232	Φ	246	÷
133	à	148	ö	163	ú	177	▒	191	┐	205	═	219	█	233	Θ	247	≈
134	å	149	ò	164	ñ	178	▓	192	└	206	╬	220	▄	234	Ω	248	°
135	ç	150	û	165	Ñ	179	│	193	┴	207	╧	221	▌	235	δ	249	∙
136	ê	151	ù	166	ª	180	┤	194	┬	208	╨	222	▐	236	∞	250	·
137	ë	152	ÿ	167	º	181	╡	195	├	209	╤	223	▀	237	φ	251	√
138	è	153	Ö	168	¿	182	╢	196	─	210	╥	224	α	238	ε	252	ⁿ
139	ï	154	Ü	169	⌐	183	╖	197	┼	211	╙	225	ß	239	∩	253	²
140	î	155	¢	170	¬	184	╕	198	╞	212	╘	226	Γ	240	≡	254	■
141	ì	156	£	171	½	185	╣	199	╟	213	╒	227	π	241	±	255	
142	Ä	157	¥														