Quality and Qualifications Ireland

Computer Programming
C20013

23rd April 2015

10:00 - 12:00

Duration: 2 hours

Instructions:

1. Return this exam paper when finished
2. Write your exam number on your answer book

This exam counts for 40% of the module

Computer Programming 2015

CTI Senior College, Clonmel

Question 1. Total 40 marks.

(a) This program contains 6 errors that will stop it from compiling. List the errors.

6 * 5 marks

```perl
#!/usr/bin/perl
use strict;
#
my (@words, $oneword, $count, $trap)
@words=split(" ", "Fee Fi Foh Fum");
$count = 0;
foreach $oneword (@wordslist) {
  $count+;
  Print "$count $oneword \n"";


  }
}
```

1	Line 4: missing ; at EOL
2	Line 7: variable @wordslist is not declared
3	Line 8: should be ++
4	Line 9: should be small 'p' in print
5	Line 9: should be only 1 " at end of string being printed
6	Line 12: extra block closure bracket }

(b) There is one error in this code snippet. Mark the error and identify it as either a *syntax* error or a *semantic* error. **5 marks**

```perl
print "Enter a number: ";
$data == <STDIN>; # semantic error
if ($data > 500) {
  print "Bignum";
}
```

(c) What does the sigil @ indicate about a variable? **5 marks**

That it's an array.

Question 2. Total 40 marks.

(a) Write a **foreach** loop that writes out the numbers from 5 to 15:   *10 marks*

```
foreach (5..15)  {
  print $_;
}
```

(b) Write the general form of the **if...elsif...else** statement: *10 marks*

(c) The following perl web-app code will compile and run but for any of at least 4 reasons will not generate the desired output. Why?

*4 * 5 marks*

```perl
#!/usr/bin/perl
# Convert input value (assumed to be miles) to kilometres
# (divd by 5 mult by 8)
use CGI;
my $gci= new CGI;
my $miles = $cgi->param('miles');
my $kilometres;
if ($miles != 0) {
   $kilometres= ($miles/5)**8;
}
else {
   $kilometres=0;
}
print <<endbit;
<html><body>
You entered $miles miles which is $kilometres kilometres.
</body></html>
endbit
```

1 No Content-type printed
2 Variable names $gci vs $cgi
3 Multiplication should be * not **
4 Skilometres should be $kilometres

Question 3. Total 40 marks.

(a) What screen output is generated by this short program: *10 marks*

```perl
#!/usr/bin/perl
printf "%c%c%c%c%c%c%c%c%c%c%c%c%c%c%c%c\n",
35,75,101,101,112,32,73,116,32,83,105,109,112,108,101,35;
```

#Keep It Simple#

(b) Indicate the values in each of the variables **$va**, **$vb** and **$vc** after this program finishes:

*3 * 10 marks*

```perl
#!/usr/bin/perl
use strict;
my ($num, $va, $vb, $vc);
$num = 0;
$va = $num * 2;
while ($num <= 9) {
   $num=$num+1;
}
$vb = 12;
$vc = $num * 2;

print ("$va, $vb, $vc\n");
```

Variable	*Value*
$va	**0**
$vb	**12**
$vc	**20**

Question 4. Total 40 marks.

To convert degrees *Celcius* to degrees *Farenheit:* *multiply* by 9, *divide* by 5, *add* 32	F=(C*9)/5+32
To convert degrees *Farenheit* to degrees *Celcius:* *subtract* 32, *multiply* by 5, *divide* by 9	C=(F-32)*5/9

Write a short perl program to:
1) Present a simple menu to show conversion options.
2) Take all steps to perform the conversion requested.

Include some error checking. Indent and comment as appropriate.   *40 marks*

```perl
1: #!/usr/bin/perl
2: use strict;
3: # Program to convert farenheit to celsius, and back
4: # sample solution 2015.Q4
5: # NOTE: this is only 1 way of doing this
6: # init the control var to be sure loop starts
7: my $choice=0;
8: my ($inputTemp, $convertedTemp, $units);
9: # We'll loop until we get a suitable option. This is our errorchecking
10:        while ($choice == 0) {
11:            print "Choose:\n 1)Convert celsius->farenheit\n 2)Convert
   farenheit->celsius\n";
12:            $choice=<STDIN>;
13:            # option 1 is Cels-> Fnht
14:            if ($choice == 1) {
15:              print "Please enter celsius: ";
16:              $inputTemp=<STDIN>;
17:              # apply formula as given
18:              if ($inputTemp == 0) {
19:                 $convertedTemp=0;
20:              }
21:              else {
22:                 $convertedTemp=($inputTemp*9)/5 + 32;
23:              }
24:              $units="Fnht";
25:            }
26:            # option 2 is Fnht-> Cels
27:            elsif ($choice == 2) {
28:              print "Please enter farenheit: ";
29:              $inputTemp=<STDIN>;
30:              # apply formula as given
31:              $convertedTemp=($inputTemp-32)*5/9;
32:              $units="Cels";
33:            }
34:            # none of the above? that's an error
35:            else {
36:              # when an error is made, let user know
37:              print "Please make a valid choice!";
38:              # prep. the control variable to go around again
39:              $choice=0;
40:            }
41:        }
42:        # I have the units added without an extra if structure
43:        print "The converted answer is $convertedTemp $units\n";
44:        # críoch
```

Figure 1. The ASCII table.

		032 SP	033 !	034 "	035 #		
036 $	37.00%	038 &	039 '	040 (	041)		
042 *	043 +	044 ,	045 –	046 .	047 /		
048 0	049 1	050 2	051 3	052 4	053 5		
054 6	055 7	056 8	057 9	058 :	059 ;		
060 <	061 =	062 >	063 ?	064 @	065 A		
066 B	067 C	068 D	069 E	070 F	071 G		
072 H	073 I	074 J	075 K	076 L	077 M		
078 N	079 O	080 P	081 Q	082 R	083 S		
084 T	085 U	086 V	087 W	088 X	089 Y		
090 Z	091 [	092 \	093]	094 ^	095 _		
096 `	097 a	098 b	099 c	100 d	101 e		
102 f	103 g	104 h	105 i	106 j	107 k		
108 l	109 m	110 n	111 o	112 p	113 q		
114 r	115 s	116 t	117 u	118 v	119 w		
120 x	121 y	122 z	123 {	124 |	125 }		
126 ~	127 ⌂						

Printable alphanumeric and punctuation characters used in normal document text