Candidate Assessment

These tasks and questions are designed to get a feel for your programming style, technical knowledge and level, they're not intended as an exam.

Typically, for programmers with some Perl experience, we'd expect these tests to be completed in Perl, although we will accept other languages as well. If you are applying for an entry level role, please feel free to use whichever language you're most familiar with.

You're not expected to build user interfaces for these tasks. Unless otherwise stated, accepting input on STDIN or the command line and outputting to STDOUT is adequate.

If you wish to include any notes about your implementation of each task such as potential limitations or improvements that may be beyond the scope of the original task, you can include a text file names similarly (eg, fizzbuzz.txt) or simply use comments or embedded documentation.

For the technical questions, please provide your answers in a text file called question_answers.txt

Remember that we're looking for:

- Intelligent use of available resources
- Organised code
- Sensible commenting
- Efficiency
- Robustness
- Security
- Maintainability
- Consistency

Completed scripts should be archived as a single compressed file (named your_name.zip or .tar.gz) with the files named after the questions (eg fizzbuzz.pl), and submitted to technical.solutions@adestra.com. If you have any questions not covered here, please feel free to email us at technical.solutions@adestra.com.

Thanks, and good luck!

FizzBuzz

Write a program that outputs the numbers from 1 to 100. For multiples of three output "Fizz" instead of the number and for multiples of seven output "Buzz". For numbers which are multiples of both three and seven output "FizzBuzz".

Popular Domains

Write a program that accepts a list of email addresses and outputs each domain and frequency in order of popularity. Limit the output to only show the top 10 domains.

Example input:
barry@example.com
simon@bigcomp.com
jane@hotmail.com
arthur@example.com
doris@example.com
john@bigcomp.com

Example output:
example.com 3
bigcomp.com 2
hotmail.com 1

Palindrome Detector

Write a program that checks whether a string is a palindrome or not (that is, is the same backwards and forwards).

Example input:
racecar

Example output:
"racecar" is a palindrome

Technical Questions

Q1) Below are two pseudo code examples. Please describe what the output will be for each of the examples. “loop(n)” is a hypothetical function that executes the code within it n times.

For example `loop(3){print "hello";}` will print “hello” three times.

Example one:

```
loop(10){
  print "Hello Robert\n";
}
loop(10){
  print "Goodbye Dave\n";
}
```

Example two:

```
loop(10){
  print "Hello Robert\n";
  loop(10){
    print "Goodbye Dave\n";
  }
}
```

Q2) The following snippets of HTML will each output the same text layout in a web browser.

True or False? Please try to explain your answer.

Snippet one:

```
<p>Hello Robert</p><p>Goodbye Dave</p>
```

Snippet two:

```
<p>Hello Robert<p>Goodbye Dave</p></p>
```

Snippet three:

```
<p>Hello Robert<p>Goodbye Dave
```

Q3) Which query would correctly insert a new record into the "Persons" table?

a) `INSERT VALUES ('first_name':'Dave', 'first_name':'Rob') INTO users;`
b) `INSERT ('Dave', 'Rob') INTO users.first_name;`
c) `INSERT INTO users ('first_name') VALUES ('Dave', 'Rob');`

Q4) How do you select a column named "first_name" from a table named "users"?

a) `SELECT users.first_name;`
b) `EXTRACT first_name FROM users;`
c) `SELECT first_name FROM users;`

Q5) How do you select all the records from a table named "users" where the value of the column "first_name" is "Peter"?

a) `SELECT [all] FROM users WHERE first_name LIKE 'Peter';`
b) `SELECT * FROM users WHERE first_name = 'Peter';`
c) `SELECT * FROM users WHERE first_name <> 'Peter';`
d) `SELECT [all] FROM users WHERE first_name = 'Peter';`

Q6) Which SQL keyword is used to sort the resultset?

a) SORT
b) SORT BY
c) ORDER BY
d) ORDER

Q7) How can you change "Jones" into "Smith" in the "last_name" column in the users table?

a) `UPDATE users SET last_name = 'Jones' INTO last_name = 'Smith';`
b) `MODIFY users SET last_name = 'Jones' INTO last_name = 'Smith';`
c) `MODIFY users SET last_name = 'Smith' WHERE last_name = 'Jones';`
d) `UPDATE users SET last_name = 'Smith' WHERE last_name = 'Jones';`

Q8) How can you delete the records where the "first_name" is "Dave" in the users table?

a) `DELETE FROM users WHERE first_name = 'Dave';`
b) `DELETE first_name = 'Dave' FROM users;`
c) `DELETE ROW first_name = 'Dave' FROM users;`

Q9) The NOT NULL constraint enforces a column to not accept null values.

True or False? Please try to explain your answer.

Q10) In the UNIX Command Line, how would you get a listing of a directory?

a) `ls my_documents`
b) `show -c my_documents`
c) `listing my_documents`

Q11) What command would you use to view some DNS information on a domain?

Q12) Ignoring the fact the IP address is private, what problem can you see with the following TXT record?

```
"v=spf1 mail.example.com ip4:192.168.1.1 include:msgfocus.com -all"
```