

## Memorandum

**To:** Cheryl Hesse

**From:** Nora Seronello, Director, Center of Excellence (COE), Central Valley/Mother Lode Region

**Date:** October, 13, 2023

**Re:** Regional program recommendation for a Software Engineering certificate

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### Background

Reedley College requested labor market information for a Software Engineering certificate for students who are interested in this field. All the occupations provided by the college in this request were at the four-year academic level. Therefore, it was determined by the Central Valley/Mother Lode (CVML) Center of Excellence (COE) that this is an upskilling opportunity for students in pursuit, or already in possession of, a BA/BS degree or higher. As a result, the COE opted to utilize this memo data analysis model for establishing demand.

Reedley College is encouraged to incorporate the findings of this report into its Software Engineering curriculum development process. The college should also include this regional program recommendation memo in their Regional Consortium application.

Additional occupational data is provided below for Software Engineering occupations in the South Central Valley/Southern Mother Lode (SCV/SML) subregion.

### Findings

#### *Demand Findings*

- Software Engineering occupations are: software developers, software quality assurance analysts and testers, and computer programmers.
- Current and projected demand for these occupations is high. In the SCV/SML subregion there are 313 projected annual openings distributed across the three Software Engineering occupations.<sup>1</sup>
- The fastest-growing occupation in Software Engineering is software developers, with a 22% projected growth rate across the region. When focusing on the seven SCV/SML subregion counties, this growth rate decreases slightly to 21%.
- Median wages for these occupations exceed the living wage of the SCV/SML subregion, which is \$11.91/hour for a single adult. The entry-level wages for Software Engineering occupations are:<sup>2</sup>
  - Software Developers - \$47.41/hour
  - Software Quality Assurance Analysts and Testers - \$39.82/hour
  - Computer Programmers - \$29.81
- The typical entry-level education requirement for the three occupations studied is a bachelor's degree.

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<sup>1</sup> Lightcast, 2023.2.

<sup>2</sup> Due to fluctuations in 10<sup>th</sup> percentile wages, 25<sup>th</sup> percentile wages have been used to describe entry-level wages.

## **Job Postings Findings**

- In the job postings data; the three occupations resulted in 911 job postings between April 2023 and September 2023 in the South Central Valley/Southern Mother Lode subregion. It's important to note that the educational levels of these job postings indicated that 65% of employers required a bachelor's degree, 15% required a master's degree, 8% required high school or GED, 6% required an associate degree, and 5% required doctoral degree.
- Common occupations and job titles associated with Software Engineering occupations in online job postings are shown below.<sup>3</sup>

### **Top 3 job titles**

- Software Developers
- Computer Programmers
- Software Quality Assurance Analysts and Testers

### **Top 10 job titles**

- Software Engineers
- Programmer Analysts
- Software Developers
- Interdisciplinary Scientists
- Interdisciplinary Engineers
- Quality Assurance Leads
- Programmers
- SharePoint Designers
- Chief Software Engineers
- .NET Developers

- Job postings for Software Engineering occupations in the SCV/SML subregion indicated “computer science” as the top skill.

### **Top 10 specialized skills**

- Computer Science
- Software Development
- SQL (Programming Language)
- C# (Programming Language)
- Software Engineering
- Agile Methodology
- JavaScript (Programming Language)
- Python (Programming Language)
- Project Management
- Java (Programming Language)

- Of the 911 job postings, 516 contained certification data. The top certification required is an engineer in training.

### **Top 5 certifications**

- Engineer in Training
- Professional Engineer (PE) License
- Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)
- CompTIA Security+
- Cardiopulmonary Resuscitation

## **Supply Findings**

- During the academic years 2019-2022, one college in the Central Valley/Mother Lode region conferred a total of two average awards for 0707.00 - Computer Software Development.<sup>4</sup>

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<sup>3</sup> Lightcast 2023.2

<sup>4</sup> Integrated Postsecondary Education Data System (IPEDS)

- Based on a comparison of occupational demand (i.e., annual openings) and supply (i.e., awards), there is an undersupply of 311 trained middle-skill workers in the South Central Valley/Southern Mother Lode subregion.

**Recommendation**

The Central Valley/Mother Lode Center of Excellence recommends that Reedley College work with the regional director, the college's advisory board, and local industry in the development of a program to address the shortage of Software Engineering workers in the subregion.