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HIS MAJESTY'S SECRETARIAT
TASHICHHO DZONG

བདེ་སྲུང་།

DE-SUUNG
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DHQ/DSP/ICT-01/22/   **30ᵗʰ December 2022**

Terms of Reference for Providing Mobile Application Development Training

A. Background

The De-suung Skilling Program (DSP) is a very important Royal Project initiated by His Majesty The King of Bhutan in 2021. As envisioned by His Majesty, DSP imparts a series of short-term high quality trainings to unemployed Bhutanese youths who have mostly completed high schools and are in their early or mid-20s. These youths have all undergone the De-suung training, which is a valued-based personal development program intended to encourage active citizenry in the process of nation-building. De-suung, which translates as "Guardians of Peace" is one of the most important Royal initiatives launched in 2011. Built upon the spirit of volunteerism, ethics, community service, integrity and civic responsibility, they volunteer to serve the nation during times of natural disasters, participate in charitable activities and other social services. Their most notable contribution was during the Covid-19 pandemic which helped the Royal Government to successfully address its numerous challenges.

The DSP trainings are mostly provided by international experts and trainers. In a few cases, public agencies and private institutes in Bhutan as well as local experts also impart the trainings either on their own or as assistants to international experts. Depending on the courses, some skilling programs are conducted in existing training institutes while others are conducted in available infrastructure or establishments, which are equipped with necessary facilities needed for the courses.

The focus of DSP is to ensure high quality and impactful short-terms trainings that are aligned to leading regional and international standards. Its strength lies in bringing in foreign talent, skills and technology. Every training aspires for regional and global certification, wherever possible.

The trainings are be followed by field experiences associated with business and entrepreneurial entities. It is expected that the trainings will eventually lead to

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engagement of youths in meaningful economic activities such as self-employment and entrepreneurship.

In line with this, DSP seeking applicants to fill a position as the Master Trainer for the following:

    i.   Course title: Mobile App Development
    ii.   **Duration**: 4.5 months
    iii.   **Location**: Onsite in Bhutan
    iv.   **No. of trainees**: 32

Training Delivery mode: The training shall be conducted face-to-face (on-site at the designated training center in Bhutan).

B. Objectives

The main objective of the program are:

    a. Develop and implement a state of the art training program on the topic with focus on experiential learning
    b. Impart employable technical skills to the participants
    c. Enhance analytical and creative thinking skills of the participants
    d. Achieve regional or global certification for the participants where possible
    e. Assess the course conducted and submit detailed reports with suggestions for further improvement.

C. Scope of work

    a. Develop a comprehensive and state of the art course on Mobile app development with focus on hands-on practical learning based on the indicative course outline given in annexure-I.
    b. Develop instructional training materials and aids such as handbooks, visual aids, online tutorials, demonstration models, and supporting training reference documentation etc. for the course.
    c. Develop assessment methods and criteria for the training

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d. Monitor and evaluate training quality and effectiveness, and thereby review and modify training methodology as necessary. Keep proper documentation of all such evaluations and their outcome, and changes made as a result.
e. Assist in the final selection of trainees from the shortlisted candidates
f. Liaise with the assistant trainers fielded by DSP.
g. Encourage the trainees to explore and learn on their own to complement their classroom learning, and thereby instill in them the love for life-long learning using various online tools and platforms
h. Instill in the trainees the DSP ideals of attention to detail, punctuality and time management, and integrity (doing the right thing even when nobody is watching).
i. Make recommendations for tools to use for recording and hosting the course as delivered by the trainer (e.g. thinkific.com)
j. Record the course delivered for future use using the technology/tool chosen by DSP in consultation with the trainer.

D. Target Participants

The target participants for the training will be youth who have undergone Desuung Training aged roughly between 20 - 27 years of age with the following qualifications:
- High Schools Youth (Maximum of 32 participants):
  o Class 12 graduates
  o Completed 1.5 months' training on 'Introduction to Digital Transformation and the Fundamentals of Computing'

E. Deliverables
The selected training provider's deliverables shall include but not be limited to the following:
a. Develop course materials along with daily lesson plans and assessment criteria
b. Conduct monitoring and evaluation of the training program, and carry out assessments, and submit reports in a timely manner
c. Facilitate video recording of the course for future reference
d. Commit to ensure placement guarantee for certain percentage of the trainees (say 15-30%) within 3 months of completing the training course. The final 15 % of the

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contract amount shall be released only upon fulfilling this requirement.

F. Criteria for the proposal

The training institutes or individual interested trainer(s) can submit proposals that include but not limited to the following:

i. **Trainer details -** Please submit the following for the trainers:
   - Extensive experience in the proposed training areas including years of experience in training delivery
   - Industry experience on the subject
   - Certification on the fields required to train
   - Curriculum Vitae

ii. **Proposal on how you can meet all the requirements under 'Scope of Work' and 'Deliverables' given in this terms of reference.**

iii. **Draft course outline and course materials:** submit draft course outline and course materials

iv. **Workplan:** Include a work plan indicating the key milestones such as the submission of course materials, etc.

v. **Include any additional requirement for the successful delivery of training**

vi. **Financial proposal:** Financial proposal for the training delivery shall be in Bhutanese Ngultrum (BTN) inclusive of applicable taxes.

G. Terms and Conditions

The training provider shall abide by the following terms and conditions:

a. Ensure that the proposed trainer is available for the training dates finalized by the agency.

b. Make available all the training materials to the participants.

c. Ensure that all the items under 'Scope of Work' and 'Deliverables' are fulfilled.

d. Sign and strictly comply with the Code of Conduct and Non-Disclosure Agreement (NDA).

e. DSP shall reserve the rights to use all the learning resources including the course materials and video recordings developed as part of this engagement.

f. The payment shall be made as per the payment schedule in Annexure II.

g. If the trainer is found to be incapable of delivering the training as expected, the contract shall be terminated and all payments withheld.

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H. Submission details

The last date for submission of the proposal meeting the TOR requirement is **30 January, 2023** after which the proposal shall not be accepted.

All communication via email shall be considered official.

The proposal shall be addressed to the Chairman, Dessung Skilling Programme (DSP), Thimphu, Bhutan. The proposal shall be submitted via email to Mr Pema Wangdi at pemaw@moea.gov.bt with a copy to Mr. Sangay Yeshi at sangay.yeshi@ns.bt and Dr. Tshering Cigay: tcd@fdignh.bt

I. Evaluation of proposals and notification of results

The proposals will be evaluated by a committee based on the requirements given in this ToR under the guidance of the high level Steering Committee of the Desuung Skilling Program.

The training providers may be contacted for clarifications and presentations during the evaluation process to understand their capabilities better.

The decision of the evaluation committee will be communicated to the training providers once it is endorsed by the Steering Committee, and it shall be final.

The last date for the notification of evaluation results will be **20th March 2023.**

After that, the selected training provider will sign the contract agreements and start the development of the complete course material in close coordination with DSP and complete all necessary ground works to start the training as per schedule.

The tentative course start date is 1 August 2023.

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Annexure 1

React Native Foundation	
Unit 1 : HTML and CSS	
#	**Topic**
1.1	Basic HTML Structure and Elements
1.2	Attributes, Classes and IDs
1.3	Basic Styling with CSS
1.4	Introduction to the CSS Box Model
1.5	Layouts:Floats & Flexbox
1.6	Components and Layout Patterns
Unit 2 : JavaScript Fundamentals I	
#	**Topic**
2.1	A Brief Introduction to JavaScript
2.2	Linking a JavaScript File
2.3	Values and Variables
2.4	Data Types
2.5	let, const and var

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2.6	Basic Operators & Operators Precedence
2.7	Strings and Template Literals
2.8	Type Conversion and Coercion
2.9	Truthy and Falsy Values
2.10	Boolean Logic
2.11	Logical Operators
2.12	The switch Statement
2.13	Statements and Expressions

Unit 3 : JavaScript Fundamentals II

#	Topic
3.1	Functions
3.2	Function Declarations vs. Expressions
3.3	Arrow Functions
3.4	Functions Calling Other Functions
3.5	Basic Array Operations (Methods)
3.6	Introduction to Objects
3.7	Dot vs. Bracket Notation

3.8	Object Methods
3.9	Iteration: The for Loop
3.1	Looping Arrays, Breaking and Continuing
3.11	Looping Backwards and Loops in Loops
3.12	The while Loop

Unit 4 : ES6

#	Topic
4.1	Constants and Variables
4.2	Concatenating Strings
4.3	Array helpers and Loop
4.4	const Fat=Arrow=> {Functions}
4.5	Object Literals
4.6	Default Arguments
4.7	Rest and Spread
4.8	Working with Classes
4.9	Destructring
5.1	Promises and Fetch

5.11	Working with Strings and Numbers
5.12	Modules
5.13	Generators
5.14	Set and Map

Mobile App Development: React Native

Unit 1 : React Native Basics

#	Topic
1.1	Setting up local development environment
1.2	Create Our First Program in React Native - Hello World
1.3	Core Component-View and Text
1.4	Styling React Native Apps
1.5	Using Flexbox To Create Layouts
1.6	iOS & Android Styling Differences
1.7	Making Content Scrollable with ScrollView

Unit 2 : Handling User Input- Login Screen

#	Topic
2.1	Building a Custom Input Component

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2.2	Creating & Configuring the Form Input Elements
2.3	Handling User Input in a Generic Way
2.4	Managing Form State & Submission
2.5	Working with Entered Data
2.6	Setting & Using Default Values
2.7	Adding Validation
2.8	Providing Visual Validation Feedback

Unit 3 : Sending HTTP Request	
#	**Topic**
3.1	Backend Setup (Firebase)
3.2	Sending POST Http Requests
3.3	Fetching Backend Data (GET Requests)
3.4	Transforming & Using Fetched Data
3.5	Using Response Data from POST Requests
3.6	Updating & Deleting Backend Data (UPDATE & DELETE Requests)
3.7	Managing the Loading State
3.8	Handling Request Errors

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Unit 4 : User Authentication	
#	**Topic**
4.1	Backend Setup
4.2	Controlling Signup & Login Screens
4.3	Sending Authentication Requests to the Backend
4.4	Creating New Users
4.5	Logging Users In
4.6	Authentication Error Handling
4.7	Storing & Managing the User Authentication State (with Context)
4.8	Extracting the Authentication Token
4.9	Protecting Screens
4.1	Adding a Logout Functionality
4.11	Storing Auth Tokens on the Device & Logging Users In Automatically
Unit 5 : React Native Screens & Navigation- Meal App	
#	**Topic**
5.1	Navigation
5.2	Getting Started with the App & Outputting Meal Categories

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5.3	Displaying Items in a Grid
5.4	Getting Started with the React Navigation Package
5.5	Implementing Navigation Between Two Screens
5.6	Working with Route Parameters To Pass Data Between Screens
5.7	Displaying Meals
5.8	Adding , Configuring & output the Meal Details Screen
5.9	Adding Header & an Icon Button to a Header
5.1	Adding & Configuring the Drawer Navigation & Creating a Drawer
5.11	Adding, Configuring & Using Bottom Tabs

Unit 6 : Using Native Device Features-Camera & Location

#	Topic
6.1	Adding a "Favorite Places" List and Editing
6.2	Adding an "Add Place" Screen + Navigation
6.3	Taking Photos and Managing Permissions
6.4	Getting Started with the Location Picker
6.5	Adding a Location Preview Map
6.6	Adding an Interactive Map (Google Maps & Apple Maps)

7.5	Adding Icons & A Splash Screen
7.6	Building Expo Apps with EAS
7.7	Building for iOS Without Expo
7.8	Building for Android Without Expo
7.9	Configuring Android Apps

Unit 8 : Push Notifications

#	Topic
8.1	What are (Local) Notifications?
8.2	Adding the Expo Notification Package
8.3	Scheduling Notifications
8.4	Configuring Scheduled Notifications
8.5	Handling Incoming Notifications
8.6	Local Notifications - Permissions
8.7	Reacting To Incoming Notifications
8.8	Reacting To User Interaction With Incoming Notifications
8.9	Understanding Push Notifications
8.1	Push Notifications Setup

8.11	Using the Push Token
8.12	Sending Push Notifications

Unit 9 : Libraries	
#	Topic
9.1	JavaScript Libraries - Date, Form validation, Fetch/Axios
9.2	ReactNative Libraries
9.3	State manatement Libraries- Redux /Redux toolkit

Annexure 2:

Payment terms/schedule

Sl. No	Payment (%)	Time Frame
1	10%	Upon acceptance of final and complete course materials and course delivery or lesson plan etc.
2	10%	Within a week of commencement of training
2	15	The end of the second month of training
3	15	The end of the third month of training

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4	20	The end of the fourth month of training
5	15	After the training is completed and all the deliverables including the training report, final assessment report, final course content etc. are delivered to the full satisfaction of the client.
6	15	After the final commitment for placement of certain percentage of trainees within 3 months of completion of training is fulfilled