

AmiGuide – The Amity Guide App

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ABSTRACT

A guide app is a kind of app that could be a guide of any organization or place. It contains all information about that organization or place in one spot. It is made for any user to use it and gain required knowledge or information about the organization or place.

This project aims to develop an android app for Amity University that will be the university's guide app. It will be a one stop solution for all information regarding the university and the campus. It can be used by any member of the university to know anything from where a department is to where the best place to have food is.

A guide app like this consists of all the little details about the university and collects it to present to the user for their use.

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I. ABOUT THE PROJECT

Introduction

Mobile applications have become an essential part of our lives in the current digital era. Mobile apps have changed the way we communicate and interact with one another and learn as a result of the extensive usage of smartphones and tablets. Digital guide applications are not an exception to this trend. Wherever we go we all carry a mobile phone on us. It has become a part of who we as humans are. Years ago, there were guidebooks available for places of interest so that anyone could easily have information about something in a few pages. But now as it has become very inconvenient, and we are drifting away from the time of guidebook usage we stumble across a new digital storm known as Guide Apps. Guide Apps are similar to the old guidebooks, but they are all present on our mobile phones in an easy-to-understand way. You are now able to have a personalised tour guide in the palm of your hands all thanks to the rise of guide apps. These applications serve as your virtual companion, providing you with all the insightful advice, suggestions, insider knowledge and guidance about any place or thing to help you get the most out of your visit.

One of the major benefits of guide apps is their ability to accommodate to a user's specific interests and preferences. It does not matter if the user wants to find a hotel to stay, a restaurant with Chinese food, a cool rock t shirt shop or a local artifacts store, a good guide application is well equipped for all of these answers in a single application.

What should a good guide application include?

A good guide application should have the following features:

1. **Interactive Maps:** Detailed interactive maps that provide the user with all the physical knowledge about the place of interest and helps the user get from one place to another.
2. **Points of Interest:** Points of Interest includes all the places present of the user's interest. Information on everything from shops, restaurants, blocks, departments, classrooms, and medical room should be present in the application for the user.
3. **Recommendations:** User recommendations are an important part of the guide application. It helps one user to learn about a place first hand from another user.
4. **Offline Access:** Guide applications should be equipped with all information offline too so that in a case where the user is out of connectivity the application does not lose its practicality. Features like offline maps help majorly in this.
5. **Transportation Information:** Transportation Information is very important for a guide application. All the information about bus stops, cab hubs, footpaths, cycling paths and roads should be presented to the user to make a more pleasant experience.
6. **Restaurant and Café Guide:** The application should be equipped with detailed information about local restaurants and café's so that a user according to their preference can easily choose the best place for them.

7. Activities and Events: All upcoming activities and events should be timely updated and presented to the user so that a user can enjoy or participate in these activities and events.
8. Resources and Services: For a university guide app the access to a thorough catalogue of university resources, including academic support centres, counselling services, health clinics, and career development opportunities is very important.

II. ANDROID APPLICATIONS

About Android

AmiGuide is an exclusive android application. Android applications or more commonly known as android apps are applications which work on the Android Operating system. Android is the most popular and widely used operating system in the world. Due to its global usage and reach android provides the developers a large space and gives them freedom to develop applications that cater to the various needs and interests of a user. Android is of open-source nature which allows developers to create and develop pioneering and customizable applications. By utilizing the Android Software Development Kit (SDK) a developer can build applications that integrate with other applications, access device functionalities, and leverage cloud services for enhanced functionality and connectivity.

To develop an android application there are various Integrated Development Environments (IDE's) available to a developer. A few examples of these IDE's include:

1. Android Studio: Android Studio is the official Integrated Development Environment (IDE) for Android application development. It offers a complete set of tools and resources for developers to create top-notch Android applications. The IDE provides a simple-to-use graphical UI designer that enables app layouts to be designed and previewed visually by developers. The user interface of the app can be more easily created and customised with tools like drag-and-drop functionality. The sophisticated code editor in Android Studio offers cutting-edge capabilities including code completion, syntax highlighting, and code refactoring. It supports both Java and Kotlin programming languages. The IDE makes use of the Gradle build system to automate the development, testing, and packaging of Android applications. For testing and debugging apps on simulated devices with various setups, Android Studio also comes with an emulator and device manager. Developers can analyse memory consumption, improve performance, and find and solve bugs in their code with the aid of debugging and profiling tools. The IDE supports support for version control systems like Git and smoothly connects with Google Play Services, giving access to numerous Google APIs. Android Studio is the preferred IDE for producing top-notch Android applications because it is frequently updated and widely used by the Android developer community.
2. IntelliJ IDEA: JetBrains created the potent Java IDE IntelliJ IDEA. It includes sophisticated capabilities like code completion, refactoring, and version control integration while offering extensive support for the development of Android apps. Actually, IntelliJ IDEA is the foundation upon which Android Studio is based.
3. Eclipse: Although Eclipse is no longer actively developed for Android development, some developers still use it today. It provides a selection of tools and plugins for Android development. The official IDE for Android app development, Android Studio, is advised instead.
4. Visual Studio: Microsoft's Visual Studio provides outstanding cross-platform mobile app development functionality, including for Android. Multiple programming languages are supported, along with a feature-rich development environment, code editing tools, and debugging capabilities. When creating Android apps, Visual Studio can be used with the cross-platform framework Xamarin.
5. Xamarin: With the help of the cross-platform development framework Xamarin, programmers can create apps in C# and .NET and then build them for several operating systems, including Android. For creating native Android apps, Xamarin integrates with Visual Studio and offers a wealth of frameworks and tools.

These are just a few samples of Android Integrated Development Environments (IDE's) available to a developer. The selection of the IDE is based on a developer's expertise with the tools, preferred programming languages, and the particular requirements of your Android app project because these IDEs offer various features and workflows. Due to its official support, extensive toolkit, and regular updates from Google, Android Studio is the most popular and highly recommended IDE for developing Android apps.

Android Languages

There are two commonly preferred and used programming languages to develop android applications, Java and Kotlin.

1. Java: For many years, Java has been the go-to language for Android development. It is a generally used programming language that offers a strong and established development ecosystem. A wide range of libraries, frameworks, and tools made exclusively for Android development are available in Java. Java is a popular language for writing Android apps, and there is a wealth of documentation and developer assistance available.
2. Kotlin: Modern programming language Kotlin was released by JetBrains in 2011 and received formal support from Google for Android development in 2017. Because Kotlin and Java are entirely compatible,

programmers can easily incorporate Java code and libraries into Kotlin projects. In comparison to Java, it provides simple syntax, null safety, improved readability, and less boilerplate code. Due to its cutting-edge features and increased efficiency, Kotlin has been becoming more and more popular among Android developers.

Guide applications are applications specifically focused to an audience. So as a reason the UI/UX of these applications matters highly.

UI/UX

The term "User Interface" (UI) describes the visual aspects and design elements of a website or application that users may interact with. Button, menu, icon, form, and layout are all included in what consumers see and can do on their screens. Intuitive and appealingly beautiful user interfaces that make it simple for users to interact with the application are the main goals of UI design. It takes into account factors including colour palettes, typography, visual hierarchy, and overall aesthetic appeal.

On the other side, UX (User Experience) concentrates on the general interaction and happiness of users with a good or service. It includes all aspects of the user's experience, such as perceptions, feelings, and interactions over the course of use. By understanding the needs, behaviour, and goals of users, UX design seeks to create meaningful and enjoyable experiences for them. It entails tasks like usability testing, information architecture, wireframing, prototyping, and information architecture.

III. PROPOSED METHODOLOGY

Software Used

AmiGuide has been developed on Android Studio due to the ease of development it provides which includes its effective UI designer which makes the UI/UX development easy for the app as this app is highly dependent on it. The choice of language for development was Java due to the vast availability of libraries and my previous experience in the language.

Application Structure

The structure of the app includes various views which consist of the university information.

Most of the views are designed in Constraint layout form as it enhances the UI/UX experience by making the view be more organized and aesthetically beautiful. Some views are developed in Linear and Relative Layout based on their usage.

Visual assets for the application which includes all the buttons and interactive touch options were obtained using a licence from Flaticon.

All the university information was first collected manually and then deployed into the application.

API 24 – Android 7.0(Nougat) was the minimum SDK chosen for the application due to its high compatibility with other android versions.

Application Testing

The testing of the application was done by connecting a physical Android 13 device through USB debugging. Further testing of the app for older and different Android variants was done using Android Studio's virtual device simulator and a few real device tests.

Challenges

The primary challenge experienced during the development was ensuring compatibility across various devices and Android versions. To mitigate this, rigorous testing was conducted on a range of devices and Android version.

Feasibility Study

Feasibility study is a process that identifies, describes, and evaluates a proposed plan and selects the best possible action. Once approved, the proposal initiates a feasibility study that describes and evaluates the best option for you in terms of Economics, Technology, Operations and Legal Practices.

1. **Technical Feasibility:** The test determines whether the required technology for the proposed system is available. How these technologies are integrated within the company. Technical testing should also assess whether the existing system can be upgraded to use new technology, or the company has the expertise to use it. In this case a completely new setting is obviously appropriate for the proposed software. The proposed system has sufficient capacity for future expansion. The proposed system will ensure accuracy, reliability, and easy access and security of data.
2. **Economic Feasibility:** It is also known as cost benefit analysis. This assessment looks at the financial part of the project. To conduct economic research, it is necessary to set real money values against any activities required to implement the proposed system. It is also necessary to set monetary values for any benefits that

will arise from the new system. Such statistics are often described as cost benefit analysis. The proposed software is economically viable, as no major funding is required.

3. Operational Feasibility: It is also known as cost benefit analysis. This assessment looks at the financial part of the project. To conduct economic research, it is necessary to set real money values against any activities required to implement the proposed system. It is also necessary to set monetary values for any benefits that will arise from the new system. Such statistics are often described as cost benefit analysis. The proposed software is economically viable, as no major funding is required.

IV. ABOUT THE APPLICATION

Application details

AmiGuide was created as a solution to the problems encountered by many students at the university. As Amity University is a massive university where so much is going on yet unfortunately, so little is available to the students about the university. A new student straight out of school can find it overwhelming how much the university has to offer.

AmiGuide is a thorough and essential tool created to improve a student's university experience. The application is there to support a student throughout their academic experience, whether they are a first-year student discovering campus for the first time or a seasoned scholar looking for convenient access to essential resources. AmiGuide offers a seamless and personalised experience catered to a student's particular needs through the application's user-friendly layout and robust features.

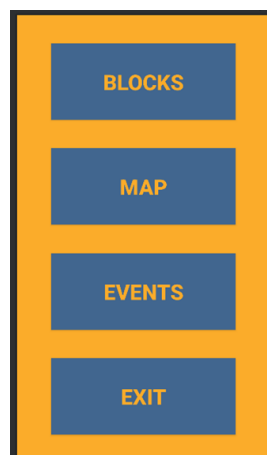


Fig 1: Prototype Home Page

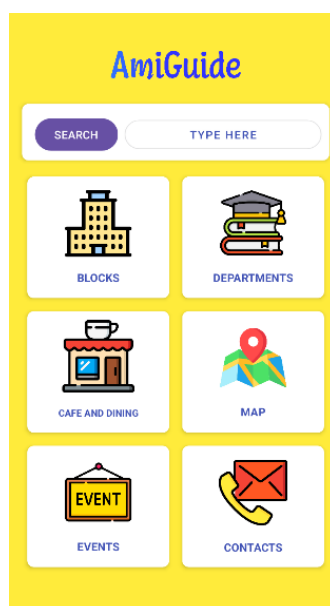


Figure 2: New home page of the application

AmiGuide Features

Key features of the application:

1. Campus Navigation: A student can easily navigate through the interactive and detailed map of the university available on the application with a link to google maps for navigation also.



Fig 2: Detailed University Map

2. Course Information: The application also contains information about the various courses the university has to offer under the Departments section. A user can choose a department and get information about the department easily.

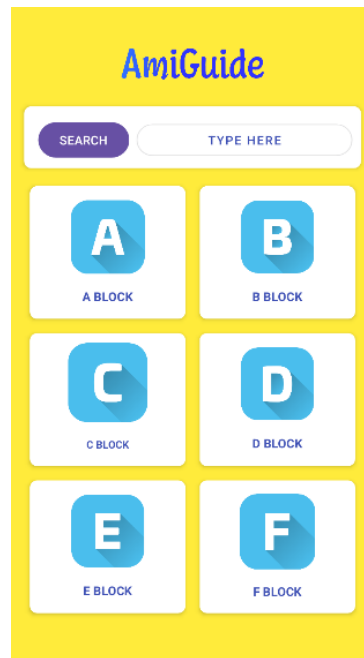


Fig 3: Block page of the application

3. Café and Dining: The café and dining section contains information about all the cafés and restaurants present in the university so that a student can easily choose where to dine.
4. Events and Notices: Events and Notices contains information about all the current events going on in the university, so that a student can never miss all the exciting events a university has to offer.
5. Contacts: The contacts section of the app has all important departmental contacts for the student.
6. Resources and Services: The application offers access to a thorough list of university resources, such as professional development possibilities, counselling services, and academic support centres.

V. CONCLUSION

Conclusion

The application developed – AmiGuide is aimed towards students at Amity University Noida who want to get all the information about the university on their fingertips. The application is filled with all the information

about the university so a student never has to again face the problem of feeling lost in the university and can also enjoy their time more.

In conclusion, AmiGuide's creation has been a substantial effort focused at improving the university experience for staff, faculty, and students. A comprehensive and user-friendly android software has successfully been developed that acts as a useful companion for all university stakeholders through careful planning, design, and implementation.

Future of the project

As we move ahead, in order to further improve and optimise the functioning of the application, it is crucial that we keep obtaining input from the university community. The AmiGuide application will continue to be current and successful in fulfilling the changing demands of users with frequent updates and enhancements.

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